United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with Mississippi Agricultural and Forestry Experiment Station

Soil Survey of Simpson County, Mississippi

How To Use This Soil Survey

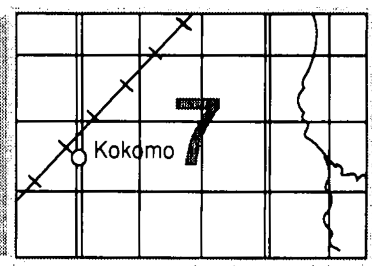
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

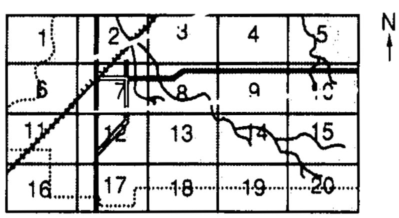
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



MAP SHEET

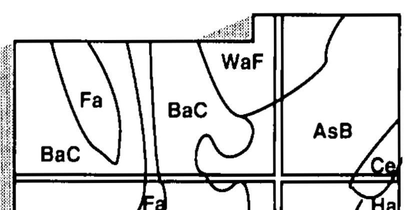
To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.

MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1989. Soil names and descriptions were approved in 1989. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1989. This soil survey was made cooperatively by the Natural Resources Conservation Service and the Mississippi Agricultural and Forestry Experiment Station. It is part of the technical assistance furnished to the Simpson County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: The Simpson County Courthouse, constructed in 1907, in an area of Savannah loam, 2 to 5 percent slopes, eroded.

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Issued January 1996

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Summary of Tables

Foreword

This soil survey contains information that can be used in land-planning programs in Simpson County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Various Federal, State, or local regulations may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land user identify and minimize the effects of soil limitations. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Homer L. Wilkes
State Conservationist
Natural Resources Conservation Service

Soil Survey of Simpson County, Mississippi

By Paul Nichols, Jr., and William A. Cole, Natural Resources Conservation Service, and Michael E. Gill and Donald Fye, Simpson County Soil and Water Conservation District

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
the Mississippi Agricultural and Forestry Experiment Station and the Simpson County Soil and Water Conservation District

SIMPSON COUNTY is in the south-central part of Mississippi (fig. 1). It has an area of 378,100 acres, or 590 square miles. The population of the county in 1990 was 23,953. Mendenhall, the county seat, is in the north-central part of the county and has a population of 2,463. Magee, the largest town in the county, has a population of 3,607.

The county is bounded on the west by the Pearl River, on the north by Rankin County, on the east by Smith County, and on the south by Lawrence, Jefferson Davis, and Covington Counties. Simpson County extends about 34 miles from east to west and 20 miles from north to south.

This survey updates the soil survey of Simpson County published in 1921 *(7)*. It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the County

This section provides general information about Simpson County. It briefly describes climate, history and development, agriculture, transportation facilities, relief and drainage, and physiography and geology.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at D'Lo, Mississippi, in the period 1951 to 1984. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 46 degrees F and the average daily minimum temperature is 34 degrees. The lowest temperature on record, which occurred at D'Lo on January 12, 1982, is 1 degree. In summer, the average temperature is 79 degrees and the average daily maximum temperature is 91 degrees. The highest recorded temperature, which occurred on June 16, 1963, is 105 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 57 inches. Of this, 27 inches, or 47 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 21 inches. The heaviest 1-day rainfall during the period of record was 6.61 inches at D'Lo on April 13, 1955. Thunderstorms occur on about 66 days each year.

The average seasonal snowfall is less than 1 inch. The greatest snow depth at any one time during the period of record was 4 inches.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 65 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south.

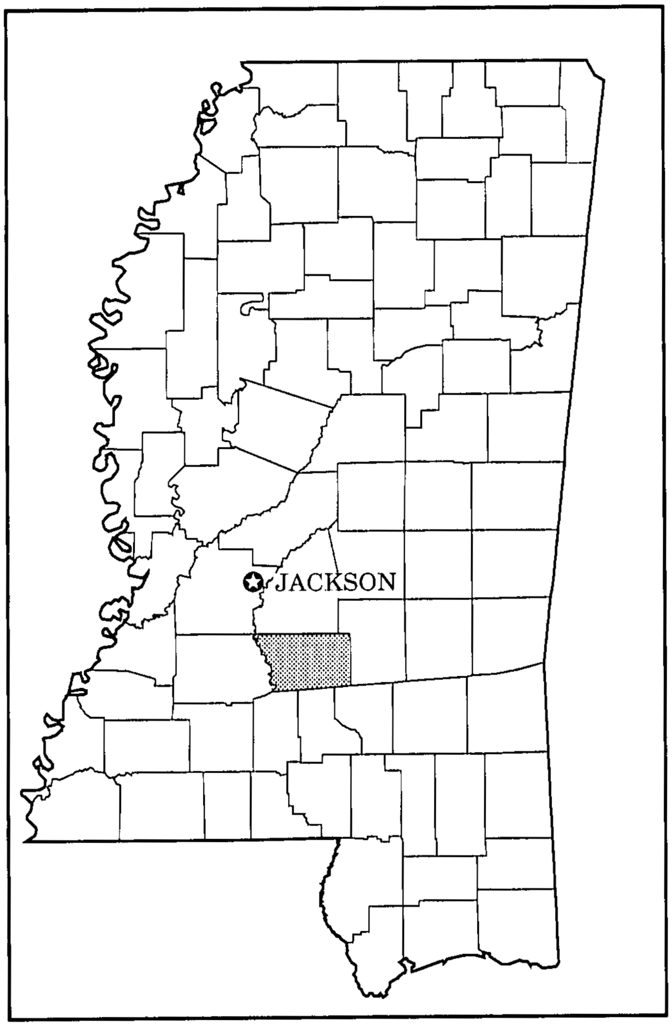

Figure 1.—Location of Simpson County in Mississippi.

Average windspeed is highest, 9 miles per hour, in spring.

Severe local storms, including tornadoes, strike occasionally in or near the area. These storms are of short duration and cause variable damage in scattered areas. Every few years, in summer or fall, a tropical depression or the remnant of a hurricane that has moved inland may cause extremely heavy rains for 1 to 3 days.

History and Development

The earliest inhabitants of the survey area were the Choctaw Indians. At various times, the area has been controlled by France, Great Britain, Spain, and the United States. Surveyors began partitioning the area, using the township and range system, in 1813.

Simpson County was created by an act of the Mississippi Legislature on January 23, 1824. It was formerly part of Copiah County and was named in honor of the Honorable Joshua Simpson. On February 4, 1825, the site of Westville was designated as the seat of county government. In 1906, after the completion of the railroad in the county, the county seat was moved to Mendenhall.

The population of Simpson County increased rapidly, and by 1860 it had grown to 6,090. Agricultural production increased as the population increased. Cotton was the major crop. The cotton was shipped to market from Jayne's Bluff, a steamboat landing on the Pearl River. In recent years, poultry production has become a major source of income in the county. Several industrial plants also are an important source of income.

Agriculture

Perry Lee, county agent, Simpson County, prepared this section.

The chief crops grown by the early settlers in Simpson County were cotton, corn, oats, and various vegetables. The major livestock enterprises were dairy operations, cattle farms, hog farms, and poultry operations.

Between 1978 and 1987, the number of farms in the county decreased from 765 to 576, the size of the average farm decreased from 175 to 165 acres, and the total acreage of cropland decreased from 67,286 to 42,420 acres. In the same period, the number of cattle farms decreased from 599 to 421 and the number of cattle decreased from 25,502 to 19,295. The number of broiler farms remained the same, 70 farms, but the number of broiler chickens increased from 10.5 million to more than 18 million. The number of hog farms declined from 96 to 39, but the number of hogs increased from 3,579 to 7,093. The acreage used for corn declined from 1,925 to 1,694 acres, but the acreage used for sorghum remained essentially the same. The acreage used for soybeans decreased from 14,420 to 5,000 acres. In 1987, corn, sorghum, soybeans, and wheat were the main row crops.

Alternative crops and the poultry industry were the main areas of agricultural expansion during the 1980's. In 1987, 150 acres was used for blueberries, 50 acres for peaches, and 5 acres for blackberries. Watermelons and cantaloupes were grown on about 1,000 acres. On broiler chicken farms, 100 new chicken houses were added in 1987. The acreage used as woodland also increased significantly between 1978 and 1987.

Transportation Facilities

Access to Simpson County is provided by eight State highways, one U.S. highway, and numerous county roads and streets. The Illinois Central Railroad crosses the county and runs roughly parallel to U.S. Highway 49, in a north-south direction. There is one airport for small aircraft near the city of Magee.

Relief and Drainage

The topography of Simpson County ranges from nearly level to steep. Wide, nearly level terraces and flood plains are dominant along the Pearl River, in the western part of the county, and along the Strong River, which runs through the county. The northwestern, southwestern, and eastern parts of the county have high, narrow ridges and deep, narrow valleys. Elevation ranges from 500 to 600 feet in the south-central part of the county. The lowest point in the county, about 200 feet above sea level, is in the extreme southwest corner on the flood plain along the Pearl River.

Simpson County is drained primarily by the Pearl River, the Strong River and its tributaries, and Okatoma Creek. A ridge that divides the Pearl River and Strong River watersheds crosses the northwestern third of the county in a southwest to northeast direction. A ridge that divides the Strong River and Okatoma Creek watersheds crosses the central part of the county in a southwest to northeast direction. The Strong River empties into the Pearl River in the southwestern part of the county. Okatoma Creek drains the eastern part of the county and flows from north to south into Covington County. The Strong River is fed by Limestone, Dabbs, Westville, Riles, and Sellers Creeks. Limestone Creek is in the northwestern part of the county, Dabbs Creek is in the north-central part, Westville and Riles Creeks are in the south-central part, and Sellers Creek is in the southeastern part.

Physiography and Geology

Frank A. Adams, geologist, Natural Resources Conservation Service, prepared this section.

Mississippi is almost entirely located within the Gulf Coastal Plain physiographic province of North America. The state has been subdivided into 12 topographic units. Simpson County is in the Piney Woods or Longleaf Pine Hills unit. The topography in this unit is characterized by rugged hills to rolling plains. Major streams have formed broad alluvial valleys and flood plains and, in some areas, terrace deposits. Areas at the higher elevations, especially in the eastern and southern sections of the county, have pre-loess terrace deposits and Citronelle deposits *(3)*. Erosion has removed most of the Citronelle material in the northern and western sections of the county (fig. 2). The exposed Miocene strata are more resistive to erosion and present a more gentle topography.

Simpson County lies within the Pearl River and Pascagoula River drainage basins. The Pearl River and its major tributary, the Strong River, drain the northern and western four-fifths of the county. Sanders Creek, Dabbs Creek, Campbell Creek, and Limestone Creek are major streams that drain into the Strong River. The southeastern one-fifth of the county is drained to the south, mainly by Bouie Creek, Okatoma Creek, and tributaries of the Leaf River, which eventually empty into the Pascagoula River.

Stratigraphic units exposed in Simpson County are primarily nonmarine sediments commonly assigned to the Miocene, Pleistocene, and Recent series. Clastic sediments that consist of varying amounts of sand, silt, clay, and pebbles were generally deposited in deltaic and fluvial environments. The Miocene strata have an overall dip to the south of 10 to 25 feet per mile. Overlying strata do not reflect true dip.

The oldest unit exposed in Simpson County is the Miocene Catahoula Formation. These sediments consist of medium grained to coarse grained sand, fine grained sand, argillaceous silt, clay, and chert gravel *(8)*. Indurated ledges of sandstone and siltstone crop out in road cuts and in stream channels, where they form rapids and waterfalls. A lower Catahoula sand interval is, locally, a primary aquifer.

Overlying the Catahoula Formation is the Hattiesburg Formation, which is also known as the Post-Catahoula Unit. This formation consists of argillaceous silt and sand similar to that of the Catahoula Formation.

The Citronelle Formation unconformably overlies sediments of Miocene age. The Citronelle Formation is identified as a Pleistocene formation *(5)*, but it may be of Pliocene age *(8)*. It is composed primarily of chert and quartz gravel and fine grained to coarse grained sand. The formation is exposed in the southern and eastern sections of the county and forms much of the rugged uplands. Isolated outliers are at the higher elevations throughout the county. The Citronelle Formation is a major source of sand and gravel.

Pre-loess terrace deposits consist mainly of fine grained to coarse grained sand. In some areas the sand contains small amounts of pea-sized gravel. These sediments are generally less coarse grained than the Citronelle sediments.

The youngest sediments in the county are alluvium and terrace deposits of Quaternary age. They are on the flood plains along the major streams and their

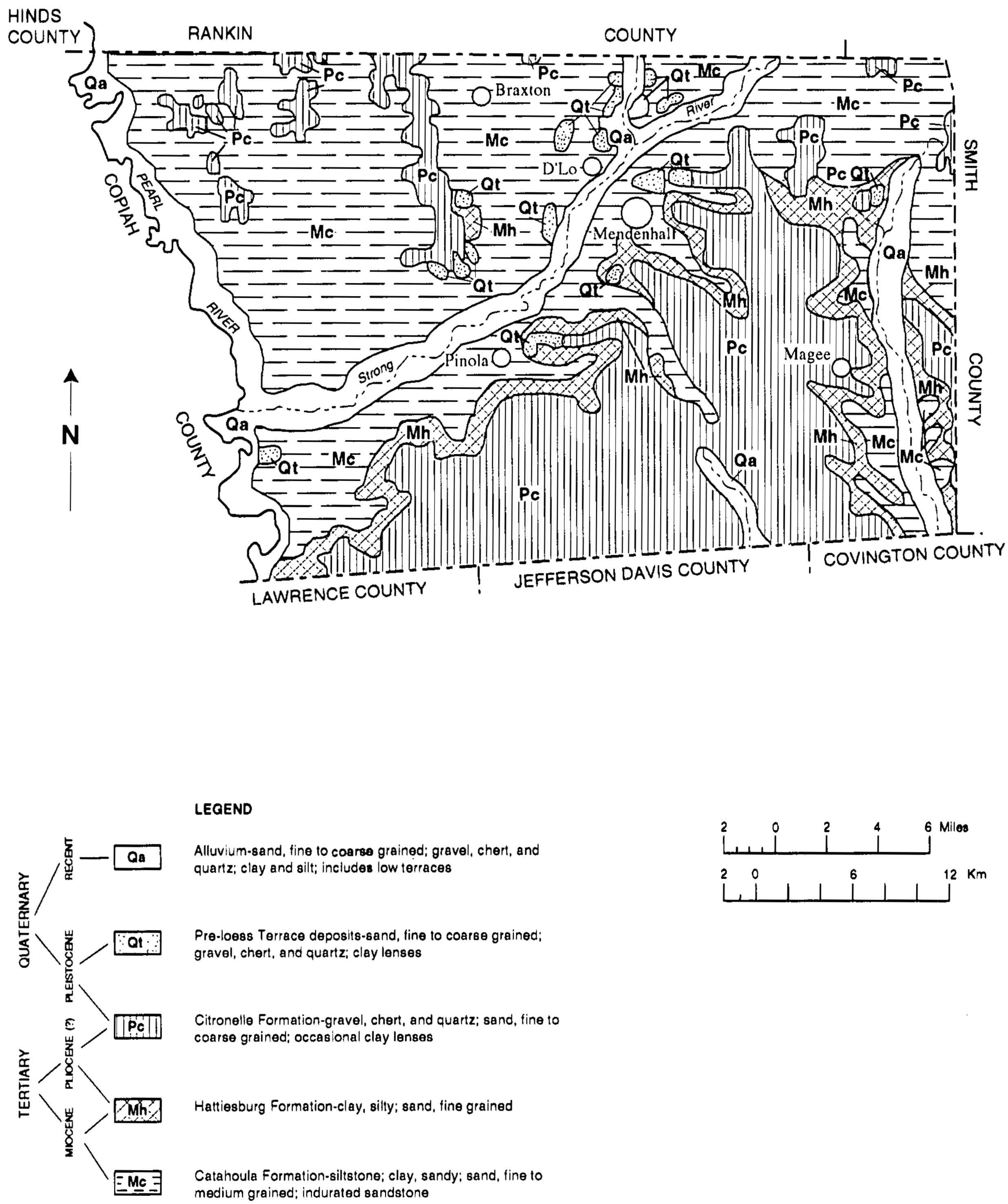

Figure 2.—Generalized geologic map of Simpson County. (After Alvin R. Bicker, Jr., 1969, Geologic Map of Mississippi, Mississippi Geological Survey, Jackson, Mississippi)

tributaries. Generally, the sediments are locally derived gravel, sand, silt, and clay.

A thin veneer of loess is apparent in some areas at the higher elevations in the western and northwestern sections of Simpson County. These windblown sediments are approximately the eastern extent of the

silts and silty clays that are common in the counties to the west. The total thickness of the loess is generally less than 2 feet.

Oil and gas are produced from several fields in Simpson County. Piney Woods Field produces natural gas from the Smackover Formation, which is at a depth of 19,800 to 21,000 feet. Sulfur is extracted from the natural gas, which is rich in hydrogen sulfide. Merit Oil Field produces oil and gas from six horizons that are between a depth of 11,500 and 13,800 feet.

Clay in the Catahoula Formation is suitable for the manufacture of brick, tile, fire-proof material, and other related products. Minable salt is at a depth of 2,800 feet in a shallow piercement salt dome near D'Lo.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

The descriptions, names, and delineations of the

soils in this survey do not fully agree with those in the surveys of adjacent counties. Differences are the result of a better understanding of the soils, modifications in series concepts, and variations in the intensity of mapping or in the extent of the soils in the survey area.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for the taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Each map unit is rated for *cultivated crops, pasture, woodland,* and *urban uses.* Cultivated crops are those grown extensively in the survey area. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments, septic tank absorption fields, and subsurface waste disposal systems.

Dominantly Nearly Level Soils That Are Excessively Drained to Poorly Drained; on Flood Plains, Terraces, and Uplands

The major soils in this group are the excessively drained, sandy Bruno soils; the well drained, loamy Jena soils; the somewhat poorly drained, loamy Mantachie, Quitman, and Stough soils; and the poorly drained, silty Rosebloom and Trebloc soils. These soils make up about 18 percent of the county. Slopes range from 0 to 5 percent.

1. Bruno-Jena-Rosebloom

Nearly level to undulating, excessively drained, sandy soils, well drained, loamy soils, and poorly drained, silty soils; on natural levees and flood plains

These soils are in the western part of Simpson County. They are mainly on the flood plain along the Pearl River. The nearly linear surface of the flood plain is broken at irregular intervals by old river runs, natural levees, sloughs, chutes, and scarps. Slopes range from 0 to 5 percent.

This map unit makes up about 4 percent of the county. It is about 40 percent Bruno and similar soils, 30 percent Jena and similar soils, 20 percent Rosebloom and similar soils, and 10 percent soils of minor extent.

Bruno soils are excessively drained and are on flood plains, mainly along the Pearl and Strong Rivers. These soils formed mainly in stratified sandy alluvial sediments. They have a surface layer of dark brown loamy sand. The underlying material is brown, light brownish gray, and yellowish brown loamy sand.

Jena soils are well drained and are on natural levees. These soils formed in loamy alluvial sediments. The surface layer is dark grayish brown and dark brown fine sandy loam. The subsoil is dark yellowish brown and yellowish brown silt loam. The underlying material is yellowish brown and light yellowish brown fine sandy loam. Strong brown, pale brown, and yellowish brown mottles are in the lower part.

Rosebloom soils are poorly drained and are on flood plains. These soils formed in silty alluvial sediments. The surface layer is dark grayish brown silt loam that has light brownish gray mottles. The upper part of the subsoil is light brownish gray silt loam. The next part is gray silt loam. The lower part is gray silty clay that has light olive brown mottles.

Of minor extent in this map unit are Cascilla and Columbus soils. Cascilla soils are well drained and are on flood plains. Columbus soils are moderately well drained and are on terraces.

Most of the acreage in this map unit is used as woodland. A few areas are used as pasture or hayland.

Bruno soils are poorly suited to cultivated crops because of frequent flooding and a low available water capacity. Jena soils are well suited to row crops. Rosebloom soils are poorly suited to row crops because of wetness and frequent flooding. Bruno soils are poorly suited to hay and pasture because of low productivity, Rosebloom soils are only moderately suited because of wetness, and Jena soils are well suited.

Bruno soils are moderately suited to woodland. The sandy texture can cause droughty conditions that increase the seedling mortality rate. Jena and Rosebloom soils are well suited to woodland. Plant competition is a management concern in areas of these soils. The use of equipment is limited because of the flooding. Also, seasonal wetness and flooding are management concerns in areas of the Rosebloom soils.

The soils in this map unit are severely limited as sites for residential development because of the flooding.

2. Quitman-Jena-Stough

Nearly level, well drained and somewhat poorly drained, loamy soils; on uplands, terraces, and flood plains

These soils are in the central and northwestern parts of Simpson County. They are mainly along the Strong River and its tributaries. Areas of these soils are occasionally flooded. Slopes range from 0 to 2 percent.

This map unit makes up about 9 percent of the county. It is about 35 percent Quitman soils, 30 percent Jena and similar soils, 20 percent Stough soils, and 15 percent soils of minor extent.

Quitman soils are somewhat poorly drained and are on terraces and uplands. They formed in loamy sediments. The surface layer is grayish brown loam that has dark brown mottles. The subsurface layer is pale brown loam that has yellowish brown mottles. The upper part of the subsoil is yellowish brown loam that has light brownish gray and strong brown mottles. The next part is mottled yellowish brown, pale brown, and light brownish gray clay loam. The lower part is light brownish gray clay loam that has strong brown and light yellowish brown mottles.

Jena soils are well drained and are on natural levees on flood plains. They formed in loamy alluvial sediments. The surface layer is dark grayish brown and dark brown fine sandy loam. The subsoil is dark yellowish brown and yellowish brown silt loam. The underlying material is yellowish brown and light yellowish brown fine sandy loam. Strong brown, pale brown, and yellowish brown mottles are in the lower part.

Stough soils are somewhat poorly drained and are on terraces and narrow flood plains along drainageways. They formed in loamy sediments. The surface layer is dark grayish brown loam. The subsurface layer is pale brown loam that has dark yellowish brown and grayish brown mottles. The upper part of the subsoil is yellowish brown loam that has light yellowish brown and light brownish gray mottles. The next part is yellowish brown loam that has dark yellowish brown, light brownish gray, and strong brown mottles. The lower part is light yellowish brown sandy loam that has light brownish gray and yellowish brown mottles.

Of minor extent in this map unit are the moderately well drained Kirkville and Savannah soils. Kirkville soils are on the flood plains. Savannah soils are on uplands and terraces.

Most of the acreage in this map unit is used as woodland or pasture. A small acreage is used as cropland.

The soils in this unit are well suited to cultivated crops, to hay and pasture, and to woodland.

The soils in this map unit are severely limited as sites for community development because of flooding and wetness.

3. Jena-Trebloc-Mantachie

Nearly level, well drained and somewhat poorly drained, loamy soils and poorly drained, silty soils; on terraces and flood plains

These soils are in the southern and eastern parts of Simpson County. They are mainly on the flood plains and terraces of Okatoma Creek and other smaller streams. Areas of these soils are subject to occasional or frequent flooding. Slopes range from 0 to 2 percent.

This map unit makes up about 5 percent of the county. It is about 40 percent Jena and similar soils, 35 percent Trebloc and similar soils, 10 percent Mantachie and similar soils, and 15 percent soils of minor extent.

Jena soils are well drained and are on natural levees on flood plains. They formed in loamy alluvial sediments. The surface layer is dark grayish brown and dark brown fine sandy loam. The subsoil is dark yellowish brown and yellowish brown silt loam. The underlying material is yellowish brown and light yellowish brown fine sandy loam. Strong brown, pale brown, and yellowish brown mottles are in the lower part.

Trebloc soils are poorly drained and are on flood plains and in depressions on terraces. They formed in silty sediments. The surface layer is dark grayish brown silt loam that has yellowish brown mottles. The upper part of the subsoil is light brownish gray silt loam that has yellowish brown and dark brown mottles. The next part is gray and grayish brown silty clay loam that has light brownish gray, strong brown, and red mottles. The lower part is light brownish gray silty clay loam that has brown and strong brown mottles.

Mantachie soils are somewhat poorly drained and are on flood plains. They formed in loamy alluvial sediments. The surface layer is dark grayish brown loam. The upper part of the subsoil is brown loam that has yellowish brown, light brownish gray, and dark yellowish brown mottles. The next part is light brownish

gray loam that has dark yellowish brown mottles. The lower part is light gray and gray clay loam that has dark yellowish brown and light gray mottles.

Of minor extent in this map unit are Kirkville, Quitman, and Stough soils. Kirkville soils are moderately well drained and are on flood plains. Quitman and Stough soils are somewhat poorly drained and are on terraces and uplands.

Most of the acreage in this map unit is used as woodland. A small acreage is used as pasture or cropland.

Jena and Mantachie soils are well suited to cultivated crops. Trebloc soils are poorly suited.

Jena and Mantachie soils are well suited to hay and pasture. Trebloc soils are moderately suited.

All of the soils in this unit are well suited to woodland.

These soils are severely limited as sites for residential development because of flooding and wetness.

Dominantly Nearly Level to Steep Soils That Are Well Drained to Somewhat Poorly Drained; on Uplands and Terraces

The major soils in this group are the well drained Ruston and Smithdale soils; the moderately well drained Lorman, Ora, Petal, Providence, and Savannah soils; and the somewhat poorly drained Bude soils. These soils make up about 82 percent of the county. Slopes range from 0 to 40 percent.

4. Providence-Bude

Nearly level to gently sloping, moderately well drained and somewhat poorly drained, silty soils that have a fragipan; on uplands and terraces

These soils are in the western and southeastern parts of Simpson County. They are mainly on high terraces along the Pearl River and Okatoma Creek. Slopes range from 0 to 5 percent.

This map unit makes up about 8 percent of the county. It is about 55 percent Providence and similar soils, 25 percent Bude and similar soils, and 20 percent soils of minor extent.

Providence soils are moderately well drained. They formed in a mantle of silty material and in the underlying loamy sediments. The surface layer is dark brown silt loam. The upper part of the subsoil is yellowish brown silt loam that has strong brown mottles and strong brown silt loam that has yellowish brown mottles. The next part is a firm, brittle, and compact fragipan of mottled yellowish brown, strong brown, and light brownish gray silt loam. The lower part of the subsoil is a firm, brittle, and compact fragipan of red loam that has yellowish brown mottles.

Bude soils are somewhat poorly drained. They formed in a mantle of silty material and in the underlying loamy sediments. The surface layer is dark brown silt loam. The upper part of the subsoil is mottled yellowish brown, light brownish gray, and pale brown silt loam. The next part is a firm, brittle, and compact fragipan of mottled yellowish brown, pale brown, and light brownish gray silty clay loam. The lower part of the subsoil is a firm, brittle, and compact fragipan of mottled strong brown, yellowish brown, brownish yellow, and gray silt loam.

Of minor extent in this map unit are the moderately well drained Kolin and Savannah soils. Kolin soils are on terraces. Savannah soils are on uplands and terraces.

Most of the acreage in this map unit is used for row crops or pasture. A small acreage is used as woodland.

Providence soils are well suited to cultivated crops. Bude soils are only moderately suited because of wetness. Providence and Bude soils are well suited to hay and pasture and to woodland.

Providence soils have moderate limitations affecting residential development. Bude soils have severe limitations because of wetness.

5. Smithdale-Providence

Moderately sloping to steep soils; some are well drained, loamy soils and some are moderately well drained, silty soils that have a fragipan; on uplands and terraces

These soils are in the northwestern and southwestern parts of Simpson County. The landscape is one of rugged hills marked by narrow ridgetops that are generally less than one-eighth mile wide. The area is highly dissected by a well developed dendritic drainage pattern. Slopes range from 5 to 35 percent.

This map unit makes up about 10 percent of the county. It is about 60 percent Smithdale and similar soils, 30 percent Providence and similar soils, and 10 percent soils of minor extent.

Smithdale soils are well drained and are on the steeper hillsides in the uplands. They formed in loamy sediments. The surface layer is dark grayish brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The upper part of the subsoil is red sandy clay loam, the next part is red sandy loam, and the lower part is yellowish red sandy loam.

Providence soils are moderately well drained and are on ridgetops in the uplands and on terraces. They formed in a mantle of silty material and in the underlying loamy sediments. The surface layer is dark brown silt loam. The upper part of the subsoil is strong brown and yellowish brown silty clay loam. The next

part is a firm, brittle, and compact fragipan of strong brown silt loam that has light brownish gray and yellowish red mottles. The lower part of the subsoil is a firm, brittle, and compact fragipan of red sandy loam that has strong brown and light brownish gray mottles.

Of minor extent in this map unit are the moderately well drained Kirkville and Savannah soils. Kirkville soils are on flood plains. Savannah soils are on high terraces and uplands.

Most areas of this map unit are used as woodland. A small acreage is used for pasture or crops.

Smithdale soils are mostly poorly suited to cultivated crops and to hay and pasture because of the slope. In the gently sloping areas on some of the ridgetops, Providence soils are well suited to cultivated crops. Providence soils also are well suited to hay and pasture.

Providence soils are well suited to woodland. There are few management concerns. In the less sloping areas, Smithdale soils are well suited or moderately suited to woodland. The slope is a moderate limitation affecting the use of equipment in areas of the Smithdale soils where slopes are more than 15 percent.

Smithdale soils are severely limited as sites for residential development because of the slope. Providence soils have moderate limitations affecting some residential uses because of seasonal wetness and low strength.

6. Petal-Smithdale

Strongly sloping to steep, moderately well drained and well drained, loamy soils; on uplands

These soils are mainly in the northwestern part of Simpson County. The landscape is rolling to hilly. It is characterized by narrow hilltops that are generally less than one-eighth mile wide and by steep hillsides that are dissected by many short drainageways. The drainageways join and form creeks that flow along winding courses on narrow flood plains. Some areas of this unit consist mostly of Petal soils, some consist mostly of Smithdale soils, and some consist of both soils. Slopes range from 8 to 35 percent.

This map unit makes up about 14 percent of the county. It is about 45 percent Petal and similar soils, 30 percent Smithdale and similar soils, and 25 percent soils of minor extent.

Petal soils are moderately well drained and are on ridgetops and side slopes. These soils formed in loamy and clayey sediments. They have a clayey subsoil. The surface layer is dark grayish brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The upper part of the subsoil is yellowish red sandy clay loam that has light brownish gray and red mottles. The next part is red clay loam that has yellowish brown and gray mottles. The lower part is light brownish gray clay that has strong brown mottles.

Smithdale soils are well drained and are on ridgetops and side slopes. They formed in loamy sediments. The surface layer is dark brown fine sandy loam that has a few rounded quartz pebbles. The subsurface layer is yellowish brown fine sandy loam that has a few rounded quartz pebbles. The upper part of the subsoil is yellowish red sandy clay loam that has about 5 percent rounded quartz pebbles. The next part is yellowish red sandy loam that has about 9 percent rounded quartz pebbles. The lower part is yellowish red sandy loam.

Of minor extent in this map unit are Kirkville, Providence, Quitman, and Savannah soils. Kirkville soils are moderately well drained and are on flood plains. Providence and Savannah soils are moderately well drained and are on high terraces and uplands. Quitman soils are somewhat poorly drained and are on terraces and uplands.

Most of the acreage in this map unit is used as woodland. A small acreage is used as pasture. Most areas are poorly suited or unsuited to cultivated crops because of the severe hazard of erosion and the slope.

These soils are well suited to woodland. The use of equipment is restricted, however, in areas where slopes are more than 15 percent.

The soils are moderately limited as sites for most kinds of residential development in areas where slopes are less than 15 percent. They are severely limited in areas where slopes are 15 percent or more.

7. Smithdale-Savannah

Gently sloping to steep, loamy soils; some are well drained and some are moderately well drained and have a fragipan; on uplands and terraces

These soils are in the north-central, south-central, and northeastern parts of Simpson County. The landscape is gently undulating to steep. It is characterized by narrow ridgetops that are generally less than one-eighth mile wide, by steep hillsides that are dissected by many short drainageways, and by narrow flood plains along streams. Slopes range from 2 to 35 percent.

This map unit makes up about 19 percent of the county. It is about 55 percent Smithdale and similar soils, 35 percent Savannah soils, and 10 percent soils of minor extent.

Smithdale soils are well drained and are on the steeper hillsides, mainly below the Savannah soils on ridgetops. They formed in loamy sediments. The surface layer is dark grayish brown fine sandy loam. The subsurface layer is yellowish brown fine sandy

loam. The upper part of the subsoil is red sandy clay loam. The next part is red sandy loam that has strong brown mottles. The lower part is yellowish red sandy loam that has strong brown mottles.

Savannah soils are moderately well drained and are mainly on ridgetops and terraces. These soils formed in loamy sediments. The surface layer is dark brown and brown loam. The upper part of the subsoil is yellowish brown loam. The next part is a firm, brittle, and compact fragipan of light yellowish brown loam that has light brownish gray and yellowish brown mottles. The lower part of the subsoil is a firm, brittle, and compact fragipan of yellowish brown loam that has light yellowish brown and red mottles.

Of minor extent in this map unit are Kirkville, Prentiss, and Ruston soils. Kirkville soils are moderately well drained and are on flood plains. Ruston soils are well drained and are on uplands. Prentiss soils are moderately well drained and are on high stream terraces and uplands.

Most of the acreage in this map unit is used as woodland or pasture. A small acreage is used for row crops.

Smithdale soils are unsuited to cultivated crops in areas where slopes are more than 15 percent because of the hazard of erosion. They are poorly suited to cultivated crops and are moderately suited to hay and pasture in areas where slopes are less than 15 percent. In the gently sloping areas on ridgetops, Savannah soils are well suited to cultivated crops. In the sloping areas, they are only moderately suited. They are well suited to hay and pasture.

Most areas of this map unit are well suited to woodland. The use of equipment is restricted, however, in areas of the Smithdale soils where slopes are greater than 15 percent. Plant competition is a moderate management concern in areas of the Savannah soils.

Smithdale soils have severe limitations affecting residential development because of the slope. Savannah soils have moderate limitations affecting some residential uses because of seasonal wetness.

8. Lorman-Providence-Freest

Gently sloping to steep, moderately well drained, silty and loamy soils; on uplands and terraces

These soils are in the southwestern part of Simpson County. The landscape is gently undulating to steep. It is characterized by narrow ridgetops that are generally less than one-eighth mile wide, by hillsides that are dissected by many short drainageways, and by narrow flood plains. Slopes range from 2 to 35 percent.

This map unit makes up about 3 percent of the county. It is about 45 percent Lorman and similar soils, 30 percent Providence and similar soils, 15 percent Freest soils, and 10 percent soils of minor extent.

Lorman soils are silty and are on gently sloping ridges and steep hillsides on uplands. They formed in interbedded clayey and silty sediments. The surface layer is brown silt loam. The upper part of the subsoil is red clay that has yellowish red and light brownish gray mottles. The lower part is light brownish gray clay that has yellowish red and strong brown mottles. The underlying material is light brownish gray silty clay loam that has olive yellow mottles.

Providence soils are silty and are on uplands and terraces. They formed in a mantle of silty material and in the underlying loamy sediments. The surface layer is dark brown silt loam. The upper part of the subsoil is strong brown silty clay loam. The next part is a firm, brittle, and compact fragipan of mottled yellowish brown, strong brown, and light brownish gray silt loam. The lower part of the subsoil is a firm, brittle, and compact fragipan of mottled yellowish brown, strong brown, and light brownish gray loam.

Freest soils are on uplands. They formed in loamy and clayey deposits. The surface layer is dark grayish brown loam. The upper part of the subsoil is yellowish brown loam that has strong brown mottles. The next part is mottled yellowish brown, yellowish red, and light brownish gray clay loam. The lower part is mottled light brownish gray, yellowish red, yellowish brown, light gray, and red clay loam.

Of minor extent in this map unit are Smithdale and Savannah soils. Smithdale soils are well drained and are on uplands. Savannah soils are moderately well drained and are on uplands and terraces.

Most areas of this map unit are used as woodland. A small acreage is used for pasture or crops.

The slope and the hazard of erosion are management concerns in areas used for cultivated crops. The hazard of erosion increases as the slope increases. In areas where slopes are less than 5 percent, Lorman soils are suited to cultivated crops and hay and pasture and Providence soils are well suited to cultivated crops. In areas where slopes are more than 15 percent, Lorman and Providence soils are unsuited to cultivated crops and Lorman soils are poorly suited to hay and pasture. Providence soils are well suited to hay and pasture. In sloping areas, Freest soils are suited to row crops, truck crops, and small grain. In gently sloping areas, they are well suited to these crops. They are well suited to grasses and legumes for hay and pasture.

Lorman soils are suited to woodland, and Providence and Freest soils are well suited.

Lorman soils are severely limited as sites for residential development because of a high shrink-swell

potential. The slope is a severe limitation in areas where slopes are more than 15 percent. Seasonal wetness is a moderate limitation affecting residential uses in areas of Providence soils.

9. Smithdale-Ora-Ruston

Gently sloping to steep, loamy soils; some are well drained and some are moderately well drained and have a fragipan; on uplands

These soils are in the east-central and southeastern parts of the county. The landscape is mainly rolling. It is characterized by ridges that are generally less than one-fourth mile wide, by sloping to steep hillsides, and by narrow drainageways. The uplands are dissected by many short drainageways and by narrow flood plains. Slopes range from 2 to 40 percent.

This map unit makes up about 28 percent of the county. It is about 40 percent Smithdale and similar soils, 25 percent Ora and similar soils, 20 percent Ruston soils, and 15 percent soils of minor extent.

Smithdale soils are well drained and are on the steeper hillsides. They formed in loamy sediments. The surface layer is fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The upper part of the subsoil is red sandy clay loam that has strong brown mottles. The lower part is red sandy loam that has pockets of strong brown, uncoated sand grains.

Ora soils are moderately well drained and are on ridgetops and side slopes. They formed in loamy sediments. The surface layer is dark yellowish brown loam. The upper part of the subsoil is red loam. The next part is yellowish red loam that has strong brown mottles. The lower part is a firm, brittle, and compact fragipan of mottled yellowish brown, yellowish red, and strong brown sandy loam. The underlying material is mottled strong brown and red sandy clay loam.

Ruston soils are well drained and are on ridgetops and hillsides. They formed in loamy sediments. The surface layer is dark brown fine sandy loam. The upper part of the subsoil is red loam that has yellowish brown mottles. The next part is yellowish brown and yellowish red sandy loam. The lower part is red sandy clay loam that has strong brown mottles.

Of minor extent in this map unit are Savannah and Stough soils. Savannah soils are moderately well drained and are on uplands and high terraces. Stough soils are somewhat poorly drained and are on terraces.

Most areas of this map unit are used as woodland or pasture. A small acreage is used for cultivated crops. The gently sloping Ruston and Ora soils on ridges are well suited to cultivated crops and to pasture and hay. Generally, Smithdale soils are poorly suited to cultivated crops. They are suited to pasture in areas where slopes are less than 15 percent. In areas where slopes are more than 15 percent, they are poorly suited to pasture and hay and are unsuited to cultivated crops.

Smithdale soils are generally suited to woodland and are well suited in areas where slopes are less than 15 percent. Ora and Ruston soils are well suited to woodland.

In areas where slopes are less than 15 percent, Smithdale soils have moderate limitations affecting residential uses. They have severe limitations in the steeper areas. Seasonal wetness is a moderate limitation in areas of Ora soils. Ruston soils have slight limitations affecting residential uses.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under the heading "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Providence silt loam, 2 to 5 percent slopes, eroded, is a phase of the Providence series.

Some map units are made up of two or more major soils. These map units are called soil complexes, soil associations, or undifferentiated groups.

A *soil complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Pits-Udorthents complex is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Quitman-Jena-Trebloc association, flooded, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Petal and Smithdale soils, 8 to 15 percent slopes, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The Pits component of the Pits-Udorthents complex is an example. Miscellaneous areas are shown on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The "Glossary" defines many of the terms used in describing the soils.

Br—Bruno loamy sand, frequently flooded. This nearly level to undulating, excessively drained soil formed in stratified sandy alluvium on flood plains. It is on natural levees or low ridges that are parallel to channels. It is subject to flooding, mainly from February through April. The flooding lasts from a few hours to a few days. Slopes range from 0 to 5 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 4 inches, dark brown loamy sand

Underlying material:
4 to 60 inches, brown, light brownish gray, and yellowish brown loamy sand that has thin strata of sand, loamy fine sand, and sandy loam

Included with this soil in mapping are small areas of Cascilla, Jena, and Rosebloom soils. Cascilla soils, which are silty, and Jena soils, which are loamy, are well drained and are in the slightly lower positions on the flood plains. Rosebloom soils are poorly drained and are in depressions and drainageways. They have a high content of silt. Also included are a few small areas of frequently flooded soils and areas that have a silty overwash. These soils are in drainageways.

Important properties of the Bruno soil—

Soil reaction: Strongly acid to neutral throughout the profile
Permeability: Rapid
Available water capacity: Low
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 4 to 6 feet in winter and early spring
Flooding: Frequent, for brief periods following heavy rains in winter and early spring
Root zone: 60 inches or more
Tilth: The surface layer is friable and can be worked throughout a wide range in moisture content.

A large acreage of this soil is used as woodland or for grass hay crops. A small acreage is used for pasture or row crops.

This soil is poorly suited to row crops and truck crops because of the low available water capacity and the flooding. Droughtiness is the main concern during prolonged dry spells in summer. Leaving crop residue on or near the surface conserves moisture. The soil is friable and can be worked throughout a wide range in moisture content. It dries rapidly after rains. The rapid percolation of water through the soil results in a high potential for leaching of lime and fertilizer. Frequent applications are needed.

This soil is poorly suited to grasses and legumes for hay and pasture because of low productivity. Some plants are difficult to establish because the soil is sandy and droughty. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is moderately suited to woodland. The dominant trees are drought-tolerant species typical of stream-border communities, such as American sycamore. Trees preferred for planting include loblolly pine and sweetgum. The main limitations affecting timber management are seedling mortality, plant competition, and an equipment limitation. Plant competition and the equipment limitation are moderate. Seedling mortality is a severe limitation. The sandy texture can cause droughty conditions, which increase the seedling mortality rate. Planting should be timed so that seedlings can become established before the flooding or droughty conditions occur. Also, a cover of mulch can preserve soil moisture. Competing vegetation around pine seedlings should be controlled until the seedlings become established. Proper site preparation and applications of approved herbicides help to control competing vegetation. The high content of sand in the surface layer restricts wheeled equipment, especially when the soil is very dry.

This soil has poor potential for use as habitat for openland wildlife and woodland wildlife and very poor potential for use as habitat for wetland wildlife.

Flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures are generally not practical because of the high cost and some risk of property damage. The flooding is a severe limitation affecting septic tank absorption fields and subsurface waste-water disposal systems. On sites for waste-water disposal systems, the contamination of ground water is a hazard because of the poor filtering capacity of the soil. An alternative site on a better suited soil should be selected.

The capability subclass is Vw. The woodland ordination symbol is 8S.

BuA—Bude silt loam, 0 to 2 percent slopes. This somewhat poorly drained soil formed in a thin mantle of silty material and in the underlying loamy sediments. It is on broad, nearly level uplands and terraces. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; dark brown silt loam

Subsoil:
5 to 16 inches; yellowish brown silt loam that has light brownish gray mottles
16 to 20 inches; mottled light brownish gray, yellowish brown, and pale brown silt loam
20 to 30 inches; a firm, brittle, and compact fragipan of mottled yellowish brown, pale brown, and light brownish gray silty clay loam
30 to 48 inches; a firm, brittle, and compact fragipan of mottled strong brown, light brownish gray, and light yellowish brown silt loam

48 to 62 inches; a firm, brittle, and compact fragipan of mottled brownish yellow, yellowish brown, and gray silt loam

Included with this soil in mapping are small areas of Providence and Trebloc soils. Providence soils are moderately well drained and are in the slightly higher positions on slopes. Trebloc soils are poorly drained and are in depressions and drainageways that are flooded during wet seasons. Also included are a few small areas of gently sloping soils on low knolls and on slopes along drainageways.

Important properties of the Bude soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate above the fragipan and slow in the fragipan
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Moderate
Seasonal high water table: Perched above the fragipan at a depth of 0.5 foot to 1.5 feet in winter and early spring
Flooding: None
Root zone: Restricted at a depth of about 20 inches by the brittle and compact fragipan
Tilth: The surface layer is friable and can be easily worked during the drier seasons, but it tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is moderately suited to a variety of row crops, truck crops, and small grain. Seasonal wetness is the main limitation. It delays planting in spring and frequently results in poor stands. The fragipan in the subsoil restricts the penetration of roots and reduces the available water capacity during the growing season. Proper row arrangement and surface field ditches can help to remove excess surface water in low areas. Using a system of conservation tillage, planting cover crops, including grasses and legumes in the cropping system, and returning crop residue to the soil can improve fertility and tilth and minimize crusting and surface compaction.

This soil is well suited to grasses and legumes for hay and pasture. Excessive wetness is the major limitation affecting forage production. Prolonged periods of wetness can kill or weaken stands of pasture grasses. Also, forage production may decline significantly during droughty periods in the summer. Restricting grazing when the soil is too wet minimizes compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to trees. Trees preferred for planting include loblolly pine, sweetgum, cherrybark oak, and southern red oak. The seasonal wetness restricts the use of equipment. Using special equipment and logging during the drier seasons help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize surface compaction. Plant competition is severe if pine trees are planted. Proper site preparation helps to control undesirable species, and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife and fair potential for use as habitat for wetland wildlife.

The wetness is a severe limitation on sites for residential and small commercial buildings. The wetness and low strength are severe limitations on sites for local roads. Special design and engineering techniques and proper construction help to overcome these limitations. The slow permeability in the fragipan and the seasonal high water table are severe limitations on sites for septic tank absorption fields and subsurface waste-water disposal systems. Alternative sites can be selected, or a specially designed system can be used.

The capability subclass is IIw. The woodland ordination symbol is 10W.

CoA—Cahaba fine sandy loam, 0 to 2 percent slopes. This nearly level, well drained soil formed in loamy and sandy alluvium. It is on terraces along the major streams. It is subject to rare flooding for brief periods during winter and early spring.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 5 inches; dark brown fine sandy loam

Subsoil:

5 to 42 inches; yellowish red loam that has dark yellowish brown mottles in the upper part

42 to 48 inches; strong brown sandy loam that has dark yellowish brown mottles

Underlying material:

48 to 56 inches; light yellowish brown loamy sand that has yellowish brown mottles

56 to 70 inches; very pale brown sand that has strong brown and yellowish brown mottles

Important soil properties—

Soil reaction: Very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate

Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of more than 6 feet
Flooding: Rare
Root zone: Deep; extends to a depth of 60 inches or more
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to row crops (fig. 3), truck crops, and small grain. Using a system of conservation tillage and returning crop residue to the soil improve tilth and minimize crusting and surface compaction after heavy rainfall.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting grazing during wet periods minimizes surface compaction.

This soil is well suited to woodland. Few limitations affect management. Mixed hardwoods and pines are the dominant trees in most wooded areas. Trees preferred for planting include loblolly pine, sweetgum, and water oak. Plant competition is a moderate concern if pine trees are planted. Site preparation can help to control undesirable plants, but the benefits of site preparation do not extend beyond one growing season.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures are generally not practical because of the high cost, but special design and proper engineering techniques can minimize the damage caused by flooding. Care should be taken to prevent excessive erosion during construction, and vegetation should be established on the site as soon as possible. The flooding is a moderate limitation affecting septic tank absorption fields and subsurface waste-water disposal systems. Establishing the system in an area that is not subject to flooding or using a specially designed system or an alternative system can partially overcome this limitation.

The capability class is I. The woodland ordination symbol is 9A.

Cs—Cascilla silt loam, occasionally flooded. This nearly level, well drained soil formed in silty alluvium. It is on flood plains and natural levees along the major streams. It is subject to flooding, mainly from February through April. The flooding generally lasts only a few hours, but some low areas are inundated for longer periods. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches; brown silt loam

Subsoil:
6 to 9 inches; dark brown silt loam that has brown mottles
9 to 29 inches; dark brown silt loam
29 to 46 inches; yellowish brown silt loam that has dark brown mottles
46 to 56 inches; brown silt loam
56 to 62 inches; dark brown silt loam that has light brownish gray mottles

Included with this soil in mapping are a few small areas of Bruno, Kirkville, and Rosebloom soils. The sandy Bruno soils are excessively drained and are on natural levees. Kirkville soils are moderately well drained and are in the slightly lower areas on the flood plain. Rosebloom soils are poorly drained and are along drainageways. Also included are small areas of frequently flooded soils near channels, a few areas of soils that have slopes of more than 2 percent, and a few areas, southwest of Magee, of ponded soils that are in depressions on uplands.

Important properties of the Cascilla soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of more than 6 feet
Flooding: Occasional, mainly for brief or very brief periods following heavy rains in winter and early spring
Root zone: Extends to a depth of more than 60 inches
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to row crops, small grain, and truck crops. If good management practices are applied, row crops can be grown every year. Slow runoff during

Figure 3.—An area of Cahaba fine sandy loam, 0 to 2 percent slopes, used for corn and soybeans. This soil can produce sustained high yields of a variety of crops.

wet seasons is the main concern. Proper row arrangement and surface field ditches can help to remove excess surface water. Returning crop residue to the soil improves tilth and minimizes crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of the wetness. Most of the flooding occurs before crops are planted, but in some years flooding may damage crops during the growing season.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of occasional wetness grow well, and these are the dominant native trees. Trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, yellow-poplar, and loblolly pine. Plant competition is the main management concern, especially if pine trees are planted. Site preparation is needed to control competition from undesirable plants, but the benefits of site preparation do not extend beyond one growing season. Natural regeneration of hardwood species is probable in all openings of one-half acre or more. Harvesting timber during the drier seasons helps to prevent the formation of ruts and minimizes surface compaction.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures are generally not practical because of the high cost, but special design and proper engineering techniques can minimize the damage caused by flooding. Flooding is a severe limitation affecting septic tank absorption fields and subsurface waste-water disposal systems. Alternative sites should be selected.

The capability subclass is IIw. The woodland ordination symbol is 14A.

CuA—Columbus silt loam, 0 to 2 percent slopes. This nearly level, moderately well drained soil formed in loamy sediments. It is on broad terraces along the major streams.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 6 inches; dark brown silt loam

Subsoil:

6 to 18 inches; yellowish brown clay loam

18 to 24 inches; yellowish brown clay loam that has

light brownish gray and strong brown mottles
24 to 36 inches; brown clay loam that has light brownish gray and strong brown mottles
36 to 48 inches; light brownish gray sandy clay loam that has yellowish brown and strong brown mottles

Underlying material:
48 to 60 inches; yellowish brown sandy loam that has pale brown and light brownish gray mottles

Included with this soil in mapping are small areas of Bude and Jena soils. Bude soils are somewhat poorly drained and are on depressional flats in drainageways. They have a fragipan. Jena soils are well drained and are in the lower areas on flood plains. They do not have a fragipan. Also included are small areas of silty soils in small depressions.

Important properties of the Columbus soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 2 to 3 feet during wet periods in winter and early spring
Flooding: None
Root zone: Restricted at a depth of 2 to 3 feet by the seasonal high water table during winter and early spring
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most of the acreage is used as pasture or cropland. Some of the acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. Seasonal wetness is the main limitation. Droughtiness is a management concern during the drier seasons. Proper arrangement of plant rows and surface field ditches can help to control wetness in cultivated areas. Crop rotations that include grasses and legumes help to maintain the content of organic matter, improve soil moisture, and help to control erosion. Returning crop residue to the soil improves fertility and tilth and minimizes crusting and compaction of the surface layer.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and yellow-poplar. Seasonal wetness restricts the use of equipment. It is a moderate limitation. Using special equipment and logging only during the drier seasons help to prevent the formation of ruts and minimize surface compaction. Plant competition is a moderate management concern, especially if pine trees are planted. Proper site preparation is needed to control competition from undesirable plants, and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Wetness caused by the seasonal high water table is a moderate limitation on sites for residential and small commercial buildings and for local roads. Special design and proper engineering techniques can help to overcome this limitation. Wetness is a severe limitation affecting septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome this limitation, or alternative systems can be used.

The capability subclass is IIw. The woodland ordination symbol is 9W.

FrB2—Freest loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil formed in loamy and clayey deposits. It is in areas of gently undulating terrain on uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches; dark grayish brown loam

Subsoil:
6 to 21 inches; yellowish brown loam that has strong brown mottles
21 to 30 inches; yellowish brown sandy clay that has grayish brown, strong brown, and yellowish red mottles
30 to 38 inches; mottled yellowish brown, yellowish red, and light brownish gray clay loam
38 to 46 inches; mottled light brownish gray, yellowish red, and yellowish brown clay loam
46 to 60 inches; mottled light gray, red, and yellowish brown clay loam

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few

rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Ora and Savannah soils. These soils are loamy throughout and have a fragipan. They are in landscape positions similar to those of the Freest soil. Also included are a few small areas, along drainageways, of somewhat poorly drained soils and a few areas of soils that have a surface layer of silt loam.

Important properties of the Freest soil—

Soil reaction: Very strongly acid or strongly acid in the surface layer, except in areas that have been limed; very strongly acid to medium acid in the upper part of the subsoil; strongly acid to neutral in the lower part of the subsoil
Permeability: Slow
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Moderate
Seasonal high water table: Perched above the clayey material at a depth of 1.5 to 2.5 feet in winter and early spring
Flooding: None
Root zone: Somewhat restricted at a depth of 1.5 to 2.5 feet because of the seasonal high water table in winter and early spring
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as woodland.

This soil is well suited to row crops, truck crops, and small grain. Seasonal wetness and the hazard of erosion are the main management concerns. Conservation tillage, grassed waterways, terraces, and contour farming can help to control erosion in cultivated areas. Crop rotations help to control erosion, increase the content of organic matter, and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include loblolly pine. Plant competition and an equipment limitation during wet seasons are moderate management concerns. If pine trees are planted, site preparation helps to control undesirable plant competition and spraying controls subsequent growth. Using equipment only during the drier periods reduces the hazard of erosion and helps to prevent the formation of ruts and surface compaction.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

This soil has severe limitations on sites for residential and small commercial buildings and for local roads because of a high shrink-swell potential in the lower part of the clayey subsoil. Also, low strength is a severe limitation affecting local roads. Special design and proper engineering techniques can partially overcome these limitations. The seasonal wetness and the slow permeability in the lower part of the subsoil are severe limitations on sites for septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIe. The woodland ordination symbol is 9W.

FrC2—Freest loam, 5 to 8 percent slopes, eroded. This sloping, moderately well drained soil formed in loamy and clayey deposits. It is in areas of undulating terrain in the uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 7 inches; dark grayish brown and pale brown loam

Subsoil:
7 to 16 inches; yellowish brown loam
16 to 28 inches; yellowish brown loam that has pale brown and light brownish gray mottles
28 to 48 inches; mottled yellowish brown, red, and light brownish gray clay loam
48 to 60 inches; light brownish gray clay that has yellowish brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Ora and Savannah soils. These soils are loamy throughout and have a fragipan. They are in landscape positions similar to those of the Freest soil. Also included are a few small areas, along drainageways, of soils that are poorly drained and a few areas of soils that have a surface layer of silt loam.

Important properties of the Freest soil—

Soil reaction: Very strongly acid or strongly acid in the

surface layer, except in areas that have been limed; very strongly acid to medium acid in the upper part of the subsoil; strongly acid to neutral in the lower part of the subsoil

Permeability: Slow

Available water capacity: High

Surface runoff: Medium

Erosion hazard: Moderate

Seasonal high water table: Perched above the clayey material at a depth of 1.5 to 2.5 feet in winter and early spring

Flooding: None

Root zone: Somewhat restricted by the perched high water table during winter and early spring

Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as woodland.

This soil is suited to row crops, truck crops, and small grain. The seasonal wetness and the hazard of erosion are the main management concerns. Conservation tillage, grassed waterways, terraces, and contour farming help to control erosion in cultivated areas. Crop rotations help to control erosion, increase the content of organic matter, and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include loblolly pine. Plant competition and an equipment limitation during wet seasons are moderate concerns. If pine trees are planted, proper site preparation helps to control undesirable species and spraying controls subsequent growth. Using equipment only during the drier periods reduces the hazard of erosion, helps to prevent the formation of ruts, and minimizes surface compaction.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

This soil has severe limitations on sites for residential and small commercial buildings and for local roads because of a high shrink-swell potential in the lower part of the clayey subsoil. Also, low strength is a severe limitation affecting local roads. These limitations can be partially overcome by special design and engineering techniques and proper construction. The seasonal wetness and the slow permeability in the lower part of the clayey subsoil are severe limitations on sites for septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIIe. The woodland ordination symbol is 9W.

Je—Jena fine sandy loam, occasionally flooded. This nearly level, well drained soil formed in loamy alluvium. It is on flood plains and natural levees along the major streams. It is subject to very brief periods of flooding, mainly from December through April. The flooding generally lasts only a few hours. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 8 inches; dark grayish brown and dark brown fine sandy loam

Subsoil:

8 to 19 inches; dark yellowish brown silt loam

19 to 34 inches; yellowish brown silt loam

Underlying material:

34 to 42 inches; yellowish brown fine sandy loam

42 to 51 inches; yellowish brown fine sandy loam that has strong brown mottles

51 to 62 inches; light yellowish brown fine sandy loam that has pale brown and yellowish brown mottles

Included with this soil in mapping are a few small areas of Bruno, Kirkville, and Stough soils. Bruno soils are excessively drained and are in the higher positions on natural levees. They have a high content of sand. Kirkville soils are moderately well drained and are in the lower areas on the flood plain. Stough soils are somewhat poorly drained and are on broad flats on stream terraces. Also included are small areas of soils, near channels, that are frequently flooded and a few areas of soils that have slopes of more than 2 percent.

Important properties of the Jena soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderate

Available water capacity: Moderate

Surface runoff: Slow

Erosion hazard: Slight

Seasonal high water table: At a depth of more than 6 feet

Flooding: Occasional, for very brief periods following heavy rains in winter and early spring
Root zone: Extends to a depth of more than 60 inches
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content.

Most areas are used as pasture or woodland. A small acreage is used as cropland.

This soil is well suited to row crops, small grain (fig. 4), and truck crops. If good management practices are applied, row crops can be grown every year. Slow runoff during wet seasons is the main concern. Proper row arrangement and surface field ditches can remove excess surface water. Returning crop residue to the soil improves tilth and minimizes crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of the wetness. Most of the flooding occurs before crops are planted, but in some years flooding may damage crops during the growing season.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of occasional flooding grow well, and these are the dominant native trees. Trees preferred for planting include eastern cottonwood, cherrybark oak, and loblolly pine. Plant competition is the main management concern and is a moderate limitation if pine trees are planted. Site preparation is needed to control competition from undesirable plants, but the benefits of site preparation do not extend beyond one growing season. Natural regeneration of hardwood species is probable in all openings of one-half acre or more. Harvesting timber during the drier seasons helps to prevent the formation of ruts and minimizes surface compaction.

This soil has good potential for use as habitat for woodland wildlife and fair potential for use as habitat for openland wildlife. It has poor potential for use as habitat for wetland wildlife.

Flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures are generally not practical because of the high cost, but special design and proper engineering techniques can minimize the damage caused by flooding. The flooding is a severe limitation affecting septic tank absorption fields and subsurface waste-water disposal systems. Alternative sites should be selected.

The capability subclass is IIw. The woodland ordination symbol is 11A.

Kr—Kirkville fine sandy loam, occasionally flooded. This nearly level, moderately well drained soil formed in loamy alluvium. It is on flood plains. Most areas are occasionally flooded for brief periods, mainly in winter and early spring. The flooding generally lasts only a few days. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; brown fine sandy loam that has dark brown mottles

Subsoil:
5 to 15 inches; yellowish brown fine sandy loam that has light yellowish brown mottles
15 to 24 inches; yellowish brown sandy loam that has brown and light brownish gray mottles
24 to 33 inches; brown silt loam that has light brownish gray and dark yellowish brown mottles
33 to 62 inches; light brownish gray silt loam that has yellowish brown mottles

Included with this soil in mapping are small areas of Cascilla and Jena soils. Cascilla soils are well drained and are in the slightly higher positions on the flood plains near stream channels. They have a higher content of silt than the Kirkville soil. Jena soils are well drained and are in the slightly higher landscape positions along channels. Also included are small areas of poorly drained soils in sloughs and drainageways. Some of these poorly drained soils are ponded for long periods.

Important properties of the Kirkville soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.5 to 2.5 feet in winter and early spring
Flooding: Occasional, for brief periods following heavy rains, especially during winter and early spring
Root zone: Extends to a depth of 60 inches; somewhat restricted at a depth of 1.5 to 2.5 feet because of the seasonal high water table in winter and early spring
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Figure 4.—Winter wheat in an area of Jena fine sandy loam, occasionally flooded. This soil is capable of producing high yields of a variety of crops.

Most areas are used as woodland or pasture or for row crops.

This soil is well suited to row crops, small grain, and truck crops (fig. 5). If good management practices are applied, row crops can be grown every year. Seasonal wetness is the main limitation. Proper row arrangement and surface field ditches can help to remove excess surface water from low areas. Returning crop residue to the soil improves fertility and tilth and minimizes crusting. Seedbed preparation and cultivation are sometimes delayed in spring because of the wetness and the flooding. Most of the flooding occurs before crops are planted, but in some years flooding may damage crops during the growing season.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition. Restricting use during wet periods minimizes surface compaction.

This soil is well suited to woodland. Most bottom-land hardwoods and pines that are tolerant of some wetness grow well, and these are the dominant native trees. Trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, yellow-poplar, and loblolly pine. Plant competition is the main management concern, and it is a severe limitation if pine trees are planted. Seasonal wetness is a moderate limitation that restricts the use of equipment. If pine trees are planted, site preparation is needed to control competition from undesirable plants, but the benefits of site preparation

do not extend beyond one growing season. Seedling mortality is a moderate management concern. Special site preparation, such as harrowing and bedding, reduces the seedling mortality rate. Natural regeneration of hardwood species is probable in all openings of one-half acre or more. Harvesting timber only during the drier seasons helps to prevent the formation of ruts and minimizes surface compaction.

This soil has good potential for use as habitat for openland and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

Flooding is a severe limitation on sites for residential and small commercial buildings and for local roads. Flood-control measures are generally not practical because of the high cost and the possibility of property damage, but special design and proper engineering techniques can minimize the damage caused by flooding. The flooding and the wetness are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Alternative sites should be selected.

The capability subclass is IIw. The woodland ordination symbol is 10W.

KtA—Kolin silt loam, 1 to 3 percent slopes. This very gently sloping, moderately well drained soil formed in a mantle of loess about 2.5 feet thick and in the underlying clayey sediments. It is on broad terraces.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches; dark brown silt loam

Subsurface layer:
6 to 8 inches; brown silt loam

Subsoil:
8 to 18 inches; yellowish brown silt loam
18 to 28 inches; mixed yellowish brown silty clay loam and grayish brown silt loam
28 to 43 inches; yellowish brown silty clay that has light brownish gray mottles
43 to 64 inches; yellowish brown silty clay that has grayish brown mottles

Included with this soil in mapping are small areas of Bude, Lorman, and Providence soils. Bude soils are somewhat poorly drained and are in depressions and drainageways. Lorman soils are in the higher positions on hillsides. They have a high content of clay. Providence soils are in landscape positions similar to those of the Kolin soil. They have a fragipan. Also included are a few small areas of severely eroded soils that have a surface layer made up mainly of clayey subsoil material and small areas of soils that have slopes of more than 5 percent.

Important properties of the Kolin soil—

Soil reaction: Very strongly acid to medium acid in the surface layer and the upper part of the subsoil, except in areas where the surface layer has been limed; very strongly acid to slightly acid in the lower part of the subsoil
Permeability: Moderately slow above the clayey subsoil and very slow in the clayey subsoil
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Slight
Seasonal high water table: Perched above the clayey subsoil at a depth of 1.5 to 3.0 feet in winter and early spring
Flooding: None
Root zone: Restricted by the perched high water table at a depth of 1.5 to 3.0 feet during winter and early spring and by the clayey subsoil
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture. A small acreage is used as woodland.

This soil is suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is the major concern. The seasonal wetness and the restricted root zone are also limitations. Conservation tillage, terraces, grassed waterways, and contour farming help to control erosion in cultivated areas. Crop rotations help to control erosion, increase the content of organic matter, and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, Shumard oak, and loblolly pine. Using equipment only during the drier periods reduces the hazard of erosion, helps to prevent the formation of ruts, and minimizes surface compaction. Plant competition is a severe limitation. Proper site preparation is needed to control undesirable species, and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

Figure 5.—Okra in an area of Kirkville fine sandy loam, occasionally flooded. Truck crops grow well on this soil.

This soil has severe limitations on sites for residential and small commercial buildings because of a high shrink-swell potential. Low strength and the high shrink-swell potential are severe limitations affecting local roads. Special design and proper engineering techniques can help to overcome these limitations. The seasonal wetness and the very slow permeability in the clayey subsoil are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIe. The woodland ordination symbol is 8A.

LoB2—Lorman silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil formed in interbedded clayey and silty sediments. It is on hilltops in dissected uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 5 inches; brown silt loam that has dark brown and red mottles

Subsoil:

5 to 13 inches; red clay that has yellowish red mottles

13 to 22 inches; red clay that has light brownish gray mottles

22 to 36 inches; light brownish gray clay that has yellowish red and yellowish brown mottles
36 to 56 inches; light brownish gray clay that has yellowish brown mottles

Underlying material:
56 to 62 inches; light brownish gray silty clay loam

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Providence and Smithdale soils. Providence soils are moderately well drained and are on narrow ridgetops. They have a fragipan, and they have a high content of silt in the upper 48 inches. Smithdale soils are well drained and are in landscape positions similar to those of the Lorman soil. They are loamy. Also included are small areas of soils that have a thick, sandy surface layer.

Important properties of the Lorman soil—

Soil reaction: Very strongly acid to slightly acid in the surface layer, except in areas that have been limed; strongly acid to mildly alkaline in the subsoil and underlying material
Permeability: Very slow
Available water capacity: High
Surface runoff: Medium
Erosion hazard: Moderate
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Somewhat limited by the firm, sticky, plastic, clayey subsoil
Tilth: The soil dries slowly after heavy rains, but it can be worked throughout a wide range in moisture content.

Most areas are used as woodland. A small acreage is used as pasture.

This soil is suited to row crops, truck crops, and small grain. A moderate hazard of erosion and the clayey texture of the soil are the main management concerns. Conservation tillage, terraces, grassed waterways, crop residue management, contour farming, contour stripcropping, and crop rotations that include grasses and legumes help to control runoff and erosion in cultivated areas.

This soil is suited to grasses and legumes for hay and pasture. Low productivity and the moderate hazard of erosion are the main management concerns. The soil is very sticky and plastic when wet because of the high content of clay. Grazing when the soil is too wet causes compaction of the surface layer, reduces the rate of water infiltration, and increases the runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is suited to woodland. Trees preferred for planting include loblolly pine. The clayey texture of the soil is a moderate limitation that restricts the use of equipment during wet periods. This limitation can be partially overcome by logging only during the drier seasons. Plant competition is a severe limitation if pine trees are planted. Proper site preparation can help to control undesirable plants.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil has severe limitations on sites for residential and small commercial buildings because of the high shrink-swell potential of the clayey subsoil. Also, low strength and the high shrink-swell potential are severe limitations affecting local roads. Special design and proper construction can help to overcome some of these limitations. The very slow permeability in the clayey subsoil is a severe limitation on sites for septic tank absorption fields and waste-water disposal systems. A specially designed system can be used, or alternative sites can be selected.

The capability subclass is IVe. The woodland ordination symbol is 8C.

LoD2—Lorman silt loam, 5 to 15 percent slopes, eroded. This sloping to moderately steep, moderately well drained soil formed in interbedded clayey and silty sediments. It is on hillsides in rolling areas and on the crests of ridges in areas of rugged and hilly terrain on uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; yellowish brown silt loam

Subsoil:
5 to 9 inches; red clay
9 to 16 inches; red clay that has pale brown and light brownish gray mottles
16 to 23 inches; mottled red, brownish yellow, and reddish yellow clay
23 to 32 inches; light brownish gray clay that has brownish yellow and red mottles
32 to 52 inches; light brownish gray silty clay loam that has red mottles

Underlying material:
52 to 60 inches; light brownish gray silty clay loam that has yellowish brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Providence and Smithdale soils. Providence soils are moderately well drained and are on narrow ridgetops. They have a fragipan, and they have a high content of silt in the upper 48 inches. Smithdale soils are well drained and are in landscape positions similar to those of the Lorman soil. They are loamy. Also included are small areas of soils that have a thick, sandy surface layer.

Important properties of the Lorman soil—

Soil reaction: Very strongly acid to slightly acid in the surface layer, except in areas that have been limed; strongly acid to mildly alkaline in the subsoil and underlying material
Permeability: Very slow
Available water capacity: High
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Somewhat limited by the firm, sticky, plastic, clayey subsoil
Tilth: The soil dries slowly after heavy rains, but it can be worked throughout a wide range in moisture content.

Most areas are used as woodland. A small acreage is used as pasture.

This soil is poorly suited to row crops, truck crops, and small grain because of the slope, the severe hazard of erosion, and the clayey texture. Maintaining a permanent cover of trees helps to control erosion.

This soil is poorly suited to grasses and legumes for hay and pasture because of low productivity, the slope, and the severe hazard of erosion. Shallow gullies tend to form if animal trails have broken the sod on the steeper slopes. Overgrazing or grazing when the soil is too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is suited to woodland. Trees preferred for planting include loblolly pine. The clayey texture of the soil is a moderate limitation that restricts the use of equipment during wet periods. This limitation can be partially overcome by logging only during the drier seasons. Plant competition is a severe limitation if pine trees are planted. Proper site preparation can help to control undesirable plants.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil has severe limitations on sites for residential and small commercial buildings because of the high shrink-swell potential of the clayey subsoil. Also, the slope is a severe limitation on sites for small commercial buildings. Low strength and the high shrink-swell potential are severe limitations on sites for local roads. Special design and proper construction can help to overcome some of these limitations. The very slow permeability in the clayey subsoil is a severe limitation affecting septic tank absorption fields and waste-water disposal systems. A specially designed alternative system can be used, or an alternative site can be selected.

The capability subclass is VIe. The woodland ordination symbol is 8C.

LoF2—Lorman silt loam, 15 to 35 percent slopes, eroded. This moderately steep or steep, moderately well drained soil formed in interbedded clayey and silty marine sediments. It is on hillsides in areas of rugged, dissected terrain on uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; brown silt loam

Subsoil:
5 to 12 inches; red clay that has yellowish red mottles
12 to 24 inches; red clay that has gray and yellowish red mottles
24 to 36 inches; light brownish gray clay that has yellowish red mottles
36 to 48 inches; light brownish gray clay that has yellowish red and strong brown mottles

Underlying material:
48 to 62 inches; light brownish gray silty clay loam that has light yellowish brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Smithdale soils. These soils are in landscape positions similar to those of the Lorman soil. They are loamy. Also included are small areas of soils that have a thick,

sandy surface layer, areas of soils that have slopes of more than 35 percent, and areas of eroded soils that have an exposed subsoil.

Important properties of the Lorman soil—

Soil reaction: Very strongly acid to slightly acid in the surface layer, except in areas that have been limed; strongly acid to mildly alkaline in the subsoil
Permeability: Very slow
Available water capacity: High
Surface runoff: Very rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: Somewhat limited by the firm, sticky, plastic, clayey subsoil

Most areas are used as woodland. A small acreage is used as pasture.

This soil is unsuited to row crops, truck crops, and small grain because of the slope, low productivity, and the hazard of erosion. Maintaining a permanent cover of trees helps to control runoff and erosion.

This soil is poorly suited to grasses and legumes for hay and pasture because of low productivity, the slope, and the hazard of erosion. Shallow gullies tend to form if livestock trails have broken the sod on the steeper slopes. Overgrazing or grazing when the soil is too wet causes surface compaction, reduces the rate of water infiltration, and increases the runoff rate. Using equipment for weed and brush control is difficult because of the slope.

This soil is suited to woodland. Trees preferred for planting include loblolly pine. The clayey texture of the soil is a moderate limitation that restricts the use of equipment. The hazard of erosion is moderate because of the slope. Also, the soil is subject to severe slumping, especially where road cuts are made. Because the clayey soil is sticky when wet, planting and harvesting equipment should be used only during the drier seasons. Harvesting methods that minimize the hazard of erosion are needed to prevent the formation of gullies and offsite sedimentation. Plant competition is a severe limitation if pine trees are planted. Proper site preparation can help to control undesirable plants.

This soil has good potential for use as habitat for woodland wildlife and fair potential for use as habitat for openland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil has severe limitations on sites for residential and small commercial buildings and for local roads because of a high shrink-swell potential in the clayey subsoil and the slope. Also, low strength is a severe limitation affecting local roads. Special design and proper engineering techniques can partially overcome some of these limitations. The slope and the very slow permeability in the clayey subsoil are severe limitations affecting septic tank absorption fields and waste-water disposal systems. A specially designed alternative system can be used, or an alternative site can be selected.

The capability subclass is VIIe. The woodland ordination symbol is 8R.

Ma—Mantachie loam, occasionally flooded. This nearly level, somewhat poorly drained soil formed in loamy alluvium. It is on flood plains. Most areas are subject to flooding, mostly in winter and early spring and generally for only brief periods. The flooding lasts longer in some low areas. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches; dark grayish brown loam

Subsoil:
6 to 12 inches; brown loam that has yellowish brown mottles
12 to 19 inches; brown loam that has dark yellowish brown and light brownish gray mottles
19 to 40 inches; light brownish gray loam that has dark yellowish brown mottles
40 to 54 inches; light gray clay loam that has dark yellowish brown mottles
54 to 62 inches; gray clay loam that has dark yellowish brown and light gray mottles

Included with this soil in mapping are small areas of the loamy, somewhat poorly drained Quitman and Stough soils. Stough soils are on terraces, and Quitman soils are on the higher stream terraces.

Important properties of the Mantachie soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 1.0 to 1.5 feet in late winter and early spring
Flooding: Occasional, for brief periods following heavy rains in winter and early spring
Root zone: Extends to a depth of about 60 inches; somewhat restricted by the seasonal high water table in winter and early spring
Tilth: The surface layer is friable and can be easily tilled

throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture or for row crops. A small acreage is used as woodland.

This soil is well suited to row crops, small grain, and truck crops. The seasonal wetness and the flooding are the main management concerns. Proper row arrangement and surface field ditches can help to remove excess surface water. Returning crop residue to the soil improves tilth, minimizes crusting, and helps to maintain fertility. Seedbed preparation and cultivation are sometimes delayed in spring because of the wetness and the flooding. Most of the flooding occurs during winter and early spring before crops are planted, but flooding can cause moderate damage to crops in low, unprotected areas after heavy rains in summer.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth and reduces the rate of water infiltration. Restricting use during wet periods minimizes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control can help to keep the pasture in good condition. Flooding can damage plants in the lower areas, and the wetness can delay growth in spring.

This soil is well suited to woodland. Bottom-land hardwoods and pines that are tolerant of wetness grow well, and these are the dominant trees in wooded areas. Trees preferred for planting include cherrybark oak, eastern cottonwood, sweetgum, green ash, and loblolly pine. The seasonal wetness is a moderate limitation that restricts the use of equipment, but this limitation can be partially overcome by harvesting only during the drier seasons. Plant competition is a severe limitation. Site preparation is needed to control competition from undesirable plants. Seedling mortality is a moderate concern. Special site preparation, such as harrowing and bedding, can reduce the seedling mortality rate, but the benefits of site preparation do not extend beyond one growing season. Natural regeneration of hardwood species is probable in all openings of one-half acre or more. Using heavy equipment only during the drier seasons minimizes surface compaction and prevents the formation of ruts.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has fair potential for use as habitat for wetland wildlife.

Flooding and wetness are severe limitations on sites for residential and small commercial buildings and for local roads. Special design and proper engineering techniques can help to partially overcome these limitations. Flood-control measures are generally not practical because of the high cost. The flooding and the wetness are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Alternative sites should be selected.

The capability subclass is IIw. The woodland ordination symbol is 10W.

OrB2—Ora loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil formed in loamy sediments. It is on broad ridgetops in the uplands. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 6 inches; dark yellowish brown loam

Subsoil:

6 to 15 inches; red loam

15 to 24 inches; yellowish red loam that has strong brown mottles

24 to 31 inches; a firm, brittle, and compact fragipan of mottled yellowish brown, yellowish red, and light brownish gray sandy loam

31 to 48 inches; a firm, brittle, and compact fragipan of mottled yellowish brown, strong brown, and light brownish gray sandy loam

48 to 55 inches; a firm, brittle, and compact fragipan of mottled strong brown, yellowish red, red, and light brownish gray sandy loam

Underlying material:

55 to 65 inches; mottled strong brown and red sandy clay loam

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Providence, Ruston, and Savannah soils. These soils are on uplands. Providence soils are moderately well drained. They are silty. Ruston soils are well drained. They are loamy and do not have a fragipan. Savannah soils are moderately well drained. They are loamy. Also included are small areas of severely eroded Ora soils that have a fragipan within a depth of 16 inches and a surface layer that is made up of subsoil material and small areas of soils that have slopes of as much as 8 percent.

Important properties of the Ora soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderate in the upper part of the subsoil and moderately slow in the fragipan
Available water capacity: Moderate
Surface runoff: Medium
Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 2.0 to 3.5 feet in winter and early spring
Flooding: None
Root zone: Limited by the compact, brittle fragipan at a depth of 2.0 to 3.5 feet
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture or cropland. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. The seasonal wetness, the restricted root zone, and the moderate available water capacity are limitations. Conservation tillage (fig. 6), terraces, grassed waterways, and contour farming help to control erosion in cultivated areas. Crop rotations increase the content of organic matter and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Grazing when the soil is too wet causes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition and minimize surface compaction.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and cherrybark oak. Plant competition is a moderate management concern, especially if pine trees are planted. Proper site preparation can help to control undesirable species, and spraying can help to control subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

Wetness caused by the seasonal high water table is a moderate limitation on sites for residential and small commercial buildings and for local roads. Also, low strength is a moderate limitation affecting local roads. Special design and proper engineering techniques help to overcome these limitations. The wetness and the moderately slow permeability in the fragipan are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Using a specially designed subsurface waste-water disposal system or using an alternative system can help to overcome these limitations.

The capability subclass is IIe. The woodland ordination symbol is 9W.

OrC2—Ora loam, 5 to 8 percent slopes, eroded. This sloping, moderately well drained soil formed in loamy sediments. It is on the lower ridges and side slopes in the uplands. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; dark brown loam

Subsoil:
5 to 20 inches; yellowish red loam
20 to 62 inches; a firm, brittle, and compact fragipan that is mottled yellowish red, red, and strong brown sandy clay loam in the upper part and sandy loam in the lower part

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Providence, Ruston, and Savannah soils. These soils are on uplands. Providence soils are moderately well drained. They are silty. Ruston soils are well drained. They are loamy and do not have a fragipan. Savannah soils are moderately well drained. They are loamy. Also included are small areas of severely eroded soils that have a fragipan within a depth of 16 inches and small areas of gently sloping soils.

Important properties of the Ora soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate in the upper part of the subsoil and moderately slow in the fragipan
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 2.0 to 3.5 feet in winter and early spring
Flooding: None
Root zone: Somewhat restricted by the compact, brittle fragipan
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Figure 6.—These soybeans were planted using a no-till method of farming in an area of Ora loam, 2 to 5 percent slopes, eroded. No-till farming is an effective erosion-control measure.

Most areas are used as pasture or cropland. A small acreage is used as woodland.

This soil is moderately suited to a variety of row crops, truck crops, and small grain. Erosion is a major management concern. The restricted root zone, the moderate available water capacity, and the seasonal wetness are limitations. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, and contour farming help to control erosion in cultivated areas. Crop rotations that include grasses and legumes help to control erosion, increase the content of organic matter, and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting and surface compaction.

This soil is well suited to grasses and legumes for hay and pasture. Grazing when the soil is too wet causes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition and minimize surface compaction.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and cherrybark oak. Plant competition is a moderate limitation, especially if pine trees are planted. Site preparation can help to control competition from undesirable plants.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil is moderately suited to use as a site for residential and small commercial buildings. Wetness is a moderate limitation on sites for residential and small commercial buildings and for local roads. Also, the slope is a moderate limitation on sites for small commercial buildings, and low strength is a moderate limitation affecting local roads. Special design and proper construction can help to overcome these limitations. The seasonal wetness and the moderately slow permeability in the fragipan are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIIe. The woodland ordination symbol is 9W.

PD—Petal and Smithdale soils, 8 to 15 percent slopes. This map unit consists of a moderately well drained Petal soil and a well drained Smithdale soil. These soils are in areas of rolling terrain on uplands. The landscape is characterized by narrow, winding ridges and strongly sloping hillsides. Areas of this unit are dissected by a strongly developed dendritic drainage pattern. The Petal soil formed in loamy and clayey sediments. The Smithdale soil formed in loamy sediments. Individual areas range from about 150 to more than 2,000 acres in size.

The soils in this unit do not occur in a regular or repeating pattern. They are intermixed on strongly sloping hillsides and long, narrow, winding ridgetops. Onsite investigation is required to identify the location of each component. The Petal soil makes up about 50 percent of the unit, the Smithdale soil makes up 25 percent, and included soils make up 25 percent. The composition varies from delineation to delineation.

Included with these soils in mapping are areas of Kirkville, Mantachie, Providence, Quitman, and Savannah soils. The moderately well drained, loamy Kirkville soils are on flood plains. The somewhat poorly drained, loamy Mantachie soils are also on flood plains. Providence soils are moderately well drained and are on uplands. They are silty and have a fragipan. The somewhat poorly drained, loamy Quitman soils are on terraces. The moderately well drained, loamy Savannah soils are on terraces and uplands.

The typical sequence, depth, and composition of the layers of the Petal soil are as follows—

Surface layer:
0 to 4 inches; dark grayish brown fine sandy loam

Subsurface layer:
4 to 8 inches; yellowish brown fine sandy loam that has strong brown mottles

Subsoil:
8 to 18 inches; yellowish red clay loam that has yellowish brown mottles
18 to 26 inches; yellowish red sandy clay loam that has light brownish gray and red mottles
26 to 38 inches; pale brown clay loam that has strong brown and red mottles
38 to 48 inches; light brownish gray clay that has strong brown mottles
48 to 60 inches; light brownish gray silty clay that has brownish yellow mottles

Important properties of the Petal soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderately slow in the upper part of the subsoil and slow in the lower part
Available water capacity: High
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: Perched above the lower part of the subsoil at a depth of 2.5 to 3.5 feet in winter and early spring
Flooding: None
Root zone: Somewhat limited by the firm, sticky, plastic subsoil
Tilth: Generally fair; the soil can be worked more easily during the drier seasons.

The typical sequence, depth, and composition of the layers of the Smithdale soil are as follows—

Surface layer:
0 to 2 inches; dark brown fine sandy loam

Subsurface layer:
2 to 10 inches; yellowish brown fine sandy loam

Subsoil:
10 to 50 inches; yellowish red sandy clay loam
50 to 60 inches; yellowish red sandy loam

Important properties of the Smithdale soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet

Flooding: None
Root zone: 60 inches or more
Tilth: Good; the soil can be worked throughout a wide range in moisture content.

Most areas are used as woodland.

These soils are poorly suited to cultivated crops, truck crops, and small grain because of the slope, low productivity, and the severe hazard of erosion.

These soils are suited to hay and pasture. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

These soils are well suited to woodland. Trees preferred for planting include loblolly pine and cherrybark oak. Rills and gullies can develop in steep areas unless adequate water bars, plant cover, or both are provided. The use of equipment is somewhat limited because of the slope. The clayey texture of the Petal soil also restricts the use of equipment during wet seasons. Logging only during the drier seasons helps to overcome this limitation.

These soils have good potential for use as habitat for openland wildlife and for woodland wildlife. They have very poor potential for use as habitat for wetland wildlife.

The slope is the main limitation on sites for residential and small commercial buildings and for local roads. It is a severe limitation on sites for small commercial buildings. The slope and the high shrink-swell potential of the Petal soil are moderate limitations affecting residential uses and local roads. Low strength also is a moderate limitation if the Petal soil is used as a site for local roads. Special design and engineering techniques and proper construction help to overcome these limitations. Wetness and the slow permeability in the lower part of the subsoil in the Petal soil are severe limitations on sites for septic tank absorption fields and waste-water disposal systems. An alternative site can be selected, or a specially designed facility can be used. The slope is a moderate limitation if the Smithdale soil is used as a site for septic tank absorption fields and waste-water disposal systems. Installing field lines on the contour helps to overcome the slope.

The capability subclass is IVe. The woodland ordination symbol is 9A.

PE—Petal and Smithdale soils, 15 to 35 percent slopes. This map unit consists of a moderately well drained Petal soil and a well drained Smithdale soil. These soils are in areas of rugged and hilly terrain on uplands. The landscape is characterized by narrow, winding ridges and steep hillsides. Areas of this unit are deeply dissected by a strongly developed dendritic drainage pattern. The Petal soil formed in loamy and clayey sediments. The Smithdale soil formed in loamy sediments. Individual areas range from about 150 to more than 2,000 acres in size.

The soils in this unit do not occur in a regular or repeating pattern. They are intermixed on steep hillsides and long, narrow, winding ridgetops. Onsite investigation is required to identify the location of each component. The Petal soil makes up about 40 percent of the unit, the Smithdale soil makes up 40 percent, and included soils make up 20 percent. The composition varies from delineation to delineation.

Included with these soils in mapping are areas of Kirkville, Ora, Providence, Quitman, and Savannah soils. The moderately well drained, loamy Kirkville soils are on flood plains. The moderately well drained, loamy Ora soils are on uplands. The moderately well drained, silty Providence soils are on uplands. They have a fragipan. The somewhat poorly drained, loamy Quitman soils are on terraces. The moderately well drained, loamy Savannah soils are on terraces and uplands. Also included are some small areas of very gravelly, loamy soils; small areas of soils that are sandy to a depth of more than 40 inches; and small areas of siltstone and sandstone outcrops.

The typical sequence, depth, and composition of the layers of the Petal soil are as follows—

Surface layer:
0 to 4 inches; dark grayish brown fine sandy loam

Subsurface layer:
4 to 13 inches; yellowish brown fine sandy loam

Subsoil:
13 to 32 inches; yellowish red sandy clay loam that has light brownish gray and red mottles
32 to 56 inches; mottled red, gray, and yellowish brown clay loam
56 to 60 inches; light brownish gray clay that has strong brown mottles

Important properties of the Petal soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderately slow in the upper part of the subsoil and slow in the lower part
Available water capacity: High
Surface runoff: Very rapid
Erosion hazard: Severe
Seasonal high water table: Perched above the clayey lower part of the subsoil at a depth of 2.5 to 3.5 feet in winter and early spring
Flooding: None
Root zone: Somewhat limited by the firm, sticky, plastic subsoil

The typical sequence, depth, and composition of the layers of the Smithdale soil are as follows—

Surface layer:
0 to 7 inches; dark brown fine sandy loam

Subsurface layer:
7 to 14 inches; yellowish brown fine sandy loam

Subsoil:
14 to 30 inches; yellowish red sandy clay loam that has about 5 percent rounded quartz gravel
30 to 50 inches; yellowish red sandy loam that has about 10 percent rounded quartz gravel
50 to 62 inches; yellowish red sandy loam

Important properties of the Smithdale soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Very rapid
Erosion hazard: Very severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: 60 inches or more

Most areas are used as woodland.

These soils are unsuited to cultivated crops, truck crops, and small grain because of the slope, low productivity, and the severe hazard of erosion.

Petal soils are suited to pasture but are poorly suited to hay. Smithdale soils are poorly suited to hay and pasture. The slope restricts the use of equipment on these soils. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

These soils are well suited to woodland. Trees preferred for planting include loblolly pine and cherrybark oak. Rills and gullies can develop unless adequate water bars, plant cover, or both are provided. The hazard of erosion is moderate. Roads and log landings can be protected from erosion by constructing diversions and by vegetating cuts and fills. The use of equipment is somewhat limited because of the slope. Trafficability is poor in areas of the Petal soil during wet seasons because the soil is sticky and plastic when wet. Logging only during the drier seasons helps to overcome the equipment limitation and the problems caused by wetness.

The Petal soil has good potential for use as habitat for openland wildlife. The Smithdale soil has fair potential for use as habitat for openland wildlife and good potential for use as habitat for woodland wildlife. These soils have very poor potential for use as habitat for wetland wildlife.

The slope is the main limitation on sites for residential and small commercial buildings and for local roads. The high shrink-swell potential and low strength also are limitations in areas of the Petal soil. Special design and engineering techniques and proper construction help to overcome these limitations. The slope, the wetness, and the slow permeability in the lower part of the subsoil of the Petal soil are severe limitations on sites for septic tank absorption fields and waste-water disposal systems. An alternative site can be selected, or a specially designed facility can be used. The slope is a severe limitation on sites for septic tank absorption fields and waste-water disposal systems in areas of the Smithdale soil. In areas that have slopes of less than 30 percent, installing field lines on the contour can help to overcome this limitation. Areas that have slopes of more than 30 percent require alternative waste-water disposal systems because of the hazard of water pollution in downslope areas.

The Petal soil is in capability subclass VIe, and the Smithdale soil is in capability subclass VIIe. The woodland ordination symbol is 9A for the Petal soil and 9R for the Smithdale soil.

Ph—Pits-Udorthents complex. This map unit consists of gravel pits, sand pits, borrow pits, piles of spoil, and heaps of soil material mixed with gravel. It occurs throughout the county.

The pits are open excavations from which soil, gravel, and sand have been removed. The depth to sand and gravel ranges from 2 to more than 20 feet. The material removed from the pits has been excavated for use in roads, driveways, and parking areas. The content of clay is fairly high in some of the pits; locally, the material from the pits is called clay gravel. The strata containing the gravel are many feet thick in places.

Udorthents are piles of spoil material of varying depth and composition. The material is a mixture of overburden and the underlying geologic deposits. The texture varies from clay to gravel. In the western part of the county, the soil material is mainly loess. In the central and eastern parts, it has a high content of sand and gravel.

Some abandoned pits are reverting to woodland. A few places support good stands of pine trees. In the open pits, the soil material supports a sparse growth of native grasses and weeds and clumps of spindly pine trees and low-quality hardwoods. Most of this vegetation is useful only for erosion control and as habitat for wildlife. Many areas of this unit are bare of vegetation.

This unit is poorly suited to crops, pasture, and woodland. Limitations affecting most urban uses are moderate or severe. Some areas are suited to recreational uses, such as the operation of offroad recreational vehicles.

No capability subclass or woodland ordination symbol is assigned.

PmA—Prentiss fine sandy loam, 0 to 2 percent slopes. This moderately well drained soil formed in loamy sediments. It is on nearly level, high terraces and uplands. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 4 inches; dark brown fine sandy loam

Subsurface layer:
4 to 9 inches; yellowish brown fine sandy loam

Subsoil:
9 to 16 inches; yellowish brown loam that has pale brown mottles
16 to 29 inches; light yellowish brown loam
29 to 38 inches; a firm, compact, and brittle fragipan of light yellowish brown loam that has yellowish brown, light brownish gray, and strong brown mottles
38 to 50 inches; a firm, compact, and brittle fragipan of light yellowish brown fine sandy loam that has dark yellowish brown and light brownish gray mottles
50 to 62 inches; a firm, compact, and brittle fragipan of mottled light yellowish brown, yellowish brown, and light brownish gray fine sandy loam

Included with this soil in mapping are small areas of Quitman, Savannah, and Stough soils.

Important properties of the Prentiss soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate in the upper part of the subsoil and moderately slow in the fragipan
Available water capacity: Medium
Surface runoff: Medium
Erosion hazard: Slight
Seasonal high water table: Perched above the fragipan at a depth of 2.0 to 2.5 feet during wet periods
Flooding: None
Root zone: Restricted by the compact, brittle fragipan
Tilth: Good; the surface layer can be worked throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture or woodland. A small acreage is used as cropland.

This soil is well suited to row crops and small grain. Conservation practices include subsurface drainage and proper row arrangement. A plowpan forms easily if the soil is tilled when wet. Chiseling or subsoiling can break up the plowpan. Returning crop residue to the soil improves fertility and tilth and minimizes crusting and surface compaction.

This soil is well suited to pasture and hay. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, pasture rotation, and deferred grazing during wet periods help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include loblolly pine (fig. 7) and cherrybark oak. Plant competition is a moderate limitation. If pine trees are planted, site preparation is needed to control competition from undesirable species, but the benefits of site preparation do not extend beyond one growing season.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

Wetness is a moderate limitation on sites for residential and small commercial buildings and for local roads. Building on raised fill material and using special design and engineering techniques help to overcome the wetness. The moderately slow permeability in the fragipan and the seasonal wetness are severe limitations affecting septic tank absorption fields. Increasing the size of the absorption field or using a specially designed system can help to overcome these limitations, or an alternative system can be used.

The capability subclass is IIw. The woodland ordination symbol is 9W.

PrA—Providence silt loam, 0 to 2 percent slopes. This moderately well drained soil formed in a mantle of silty material about 2 feet thick and in the underlying loamy sediments. It is on nearly level uplands and terraces. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; dark brown silt loam

Subsurface layer:
5 to 10 inches; yellowish brown silt loam

Subsoil:
10 to 14 inches; yellowish brown silt loam that has strong brown mottles
14 to 24 inches; strong brown silt loam that has yellowish brown mottles

Figure 7.—Loblolly pine in an area of Prentiss fine sandy loam, 0 to 2 percent slopes.

24 to 32 inches; a firm, brittle, and compact fragipan of strong brown silt loam that has yellowish brown and light brownish gray mottles
32 to 48 inches; a firm, brittle, and compact fragipan of mottled strong brown, yellowish brown, and light brownish gray loam
48 to 60 inches; a firm, compact, and brittle fragipan of mottled strong brown, red, and light brownish gray sandy loam

Included with this soil in mapping are small areas of Bude and Savannah soils. Bude soils are somewhat poorly drained and are on terraces. Savannah soils are loamy and are on uplands. Also included are small areas of soils in which the subsoil is less sandy and more silty in the lower part than that of the Providence soil.

Important properties of the Providence soil—

Soil reaction: Very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate above the fragipan and moderately slow in the fragipan
Available water capacity: Moderate

Surface runoff: Slow
Erosion hazard: Moderate
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet in winter and early spring
Flooding: None
Root zone: Restricted at a depth of 1.5 to 3.0 feet by the compact, brittle fragipan
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. Seasonal wetness is the main limitation. The restricted root zone and the moderate available water capacity are also limitations. Proper row arrangement and surface field ditches can help to control wetness in cultivated areas. Crop rotations that include grasses and legumes help to maintain the content of organic matter and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting and surface compaction.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. The seasonal wetness is a moderate limitation that restricts the use of equipment. Using special equipment and logging only during the drier seasons help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize surface compaction. Plant competition is severe. If pine trees are planted, proper site preparation can help to control undesirable species and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Wetness caused by the seasonal high water table is a moderate limitation on sites for residential and small commercial buildings. Low strength is a severe limitation affecting local roads. Special design and proper engineering techniques can help to overcome these limitations. The wetness and the moderately slow permeability in the fragipan are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIw. The woodland ordination symbol is 9W.

PrB2—Providence silt loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil formed in a mantle of silty material about 2 feet thick and in the underlying loamy sediments. It is on ridgetops in dissected uplands and on high terraces. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; dark brown silt loam

Subsoil:
5 to 13 inches; yellowish brown silt loam that has strong brown mottles
13 to 22 inches; strong brown silty clay loam
22 to 28 inches; a firm, brittle, and compact fragipan of yellowish brown silt loam that has strong brown mottles
28 to 38 inches; a firm, brittle, and compact fragipan of mottled yellowish brown, strong brown, and light brownish gray silt loam
38 to 50 inches; a firm, brittle, and compact fragipan of mottled yellowish brown, strong brown, and light brownish gray loam
50 to 60 inches; a firm, brittle, and compact fragipan of red loam that has yellowish brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil.

Included with this soil in mapping are small areas of Savannah soils. Savannah soils are moderately well drained and are in landscape positions similar to those of the Providence soil. They are loamy. Also included are small areas of severely eroded soils in which the surface layer is mainly made up of subsoil material and small areas of soils that have slopes of more than 5 percent.

Important properties of the Providence soil—

Soil reaction: Very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate above the fragipan and moderately slow in the fragipan
Available water capacity: Moderate
Surface runoff: Medium

Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet in winter and early spring
Flooding: None
Root zone: Restricted by the compact, brittle fragipan at a depth of 1.5 to 3.0 feet
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. Seasonal wetness, the restricted root zone, and the moderate available water capacity are additional limitations. Conservation tillage, terraces, grassed waterways, and contour farming help to control erosion in cultivated areas. Crop rotations that include grasses and legumes help to maintain the content of organic matter, improve soil moisture, and help to control erosion. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. The seasonal wetness restricts the use of equipment. Using special equipment and logging only during the drier seasons help to overcome the problems caused by wetness and minimize surface compaction. Plant competition is severe. If pine trees are planted, proper site preparation can help to control undesirable species and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Wetness caused by the seasonal high water table is a moderate limitation on sites for residential and small commercial buildings. Low strength is a severe limitation on sites for local roads. Special design and proper engineering techniques can help to overcome these limitations. The seasonal wetness and the moderately slow permeability in the fragipan are severe limitations affecting septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIe. The woodland ordination symbol is 9W.

PrC2—Providence silt loam, 5 to 8 percent slopes, eroded. This moderately sloping, moderately well drained soil formed in a mantle of silty material about 2 feet thick and in the underlying loamy sediments. It is on side slopes in undulating to rolling uplands, on ridgetops in hilly, dissected uplands, and on high terraces. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches; dark brown silt loam that has pockets of yellowish brown silt loam

Subsoil:
6 to 14 inches; strong brown silty clay loam
14 to 22 inches; yellowish brown silty clay loam that has strong brown and red mottles
22 to 42 inches; a firm, brittle, and compact fragipan of strong brown silt loam that has light brownish gray and yellowish red mottles
42 to 60 inches; a firm, brittle, and compact fragipan of red sandy loam that has strong brown and light brownish gray mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Savannah soils. The loamy Savannah soils are moderately well drained and are in landscape positions similar to those of the Providence soil. Also included are small areas of severely eroded soils in which the surface layer is made up of subsoil material and small areas of soils that have slopes of less than 5 percent.

Important properties of the Providence soil—

Soil reaction: Very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate above the fragipan and moderately slow in the fragipan
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet in winter and early spring
Flooding: None

Root zone: Restricted by the compact, brittle fragipan at a depth of 1.5 to 3.0 feet
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture. A small acreage is used as woodland or cropland.

This soil is moderately suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. The restricted root zone, the moderate available water capacity, and the seasonal wetness are limitations. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotations that include grasses and legumes help to maintain the content of organic matter, improve soil moisture, and help to control erosion. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and Shumard oak. The hazard of erosion is moderate, and plant competition is a severe limitation. If pine trees are planted, site preparation can help to control competition from undesirable plants.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil is moderately suited to use as a site for residential and small commercial buildings. The seasonal wetness is a moderate limitation affecting residential uses, and the wetness and the slope are moderate limitations on sites for small commercial buildings. Low strength is a severe limitation on sites for local roads. Special design and proper construction can help to overcome these limitations. The moderately slow permeability in the fragipan and the seasonal wetness severely limit the use of this soil for septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIIe. The woodland ordination symbol is 9W.

QaA—Quitman loam, 0 to 2 percent slopes. This somewhat poorly drained soil formed in loamy sediments. It is on broad, nearly level uplands and old terraces.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; grayish brown loam that has dark brown mottles

Subsurface layer:
5 to 10 inches; pale brown loam that has yellowish brown mottles

Subsoil:
10 to 18 inches; yellowish brown loam that has light brownish gray and strong brown mottles
18 to 29 inches; mottled yellowish brown, pale brown, and light brownish gray clay loam
29 to 42 inches; light brownish gray clay loam that has strong brown and light yellowish brown mottles
42 to 60 inches; light brownish gray clay loam that has light yellowish brown and strong brown mottles

Included with this soil in mapping are small areas of Savannah and Stough soils. These soils are on terraces and uplands. The loamy Savannah soils are moderately well drained. They have a fragipan. The loamy Stough soils are somewhat poorly drained. Also included are a few small areas of soils that are subject to flooding.

Important properties of the Quitman soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderately slow
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: Perched at a depth of 1.5 to 2.0 feet in winter and early spring
Flooding: None
Root zone: Restricted at a depth of about 1.5 to 2.0 feet by the high water table during winter and early spring
Tilth: The surface layer is friable and can be easily worked during the drier seasons, but it tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. Seasonal wetness is the main limitation affecting crop production. The wetness delays planting in spring and frequently results in poor stands. Proper row arrangement and surface field ditches can

help to remove excess surface water in low areas. Using a system of conservation tillage, planting cover crops, using a cropping system that includes grasses and legumes, and returning crop residue to the soil improve fertility and tilth and minimize crusting and surface compaction.

This soil is well suited to grasses and legumes for hay and pasture (fig. 8). Excessive wetness is the major limitation affecting forage production. Prolonged periods of wetness can kill or weaken stands of pasture grasses. Also, forage production can decline significantly during droughty periods in summer. Restricting grazing when the soil is too wet minimizes compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include loblolly pine and sweetgum. The seasonal wetness is a moderate limitation that restricts the use of equipment. Using special equipment and logging only during the drier seasons help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize surface compaction. Plant competition is a moderate limitation if pine trees are planted. Proper site preparation can help to control undesirable species, and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has poor potential for use as habitat for wetland wildlife.

The wetness is a moderate limitation on sites for residential and small commercial buildings and for local roads. Low strength is a moderate limitation on sites for local roads. Constructing on raised fill material and using special design, proper engineering techniques, and proper construction methods help to overcome these limitations. The moderately slow permeability and the seasonal high water table are severe limitations on sites for septic tank absorption fields and subsurface waste-water disposal systems. An alternative site on a better suited soil can be selected, or a specially designed alternative system can be used.

The capability subclass is IIw. The woodland ordination symbol is 10W.

QJT—Quitman-Jena-Trebloc association, flooded. This map unit consists of a nearly level, somewhat poorly drained Quitman soil, a well drained Jena soil, and a poorly drained Trebloc soil. Slopes range from 0 to 2 percent. Individual areas range from 160 to 1,000 acres in size. The Quitman soil formed in loamy alluvium. It is on terraces. The Jena soil also formed in loamy alluvium. It is on flood plains. The Trebloc soil formed in silty alluvium. It is on flood plains. The Quitman soil is occasionally flooded for brief periods in winter and early spring. The Jena soil is occasionally flooded for long periods in winter and early spring. The Trebloc soil is frequently flooded for long periods in winter and spring.

The soils in this unit occur in a regular and repeating pattern, but onsite investigation is required to identify the location of each component. Quitman and similar soils make up about 35 percent of the unit, Jena and similar soils make up 25 percent, Trebloc and similar soils make up 15 percent, and included soils make up 25 percent. The composition varies from delineation to delineation.

Included with these soils in mapping are small areas of Cahaba, Prentiss, and Stough soils. The well drained, loamy Cahaba soils are on the higher terraces. The loamy Prentiss soils are moderately well drained and are on terraces and uplands. They have a fragipan. The somewhat poorly drained, loamy Stough soils are on terraces and uplands. Also included are small areas of sand deposits on natural levees adjacent to streams.

The typical sequence, depth, and composition of the layers of the Quitman soil are as follows—

Surface layer:
0 to 6 inches; dark brown loam

Subsurface layer:
6 to 9 inches; yellowish brown loam

Subsoil:
9 to 14 inches; yellowish brown loam
14 to 21 inches; yellowish brown loam that has strong brown and light brownish gray mottles
21 to 31 inches; yellowish brown clay loam that has light brownish gray and pale brown mottles
31 to 60 inches; mottled light brownish gray and pale brown loam

Important properties of the Quitman soil—

Permeability: Moderately slow
Available water capacity: High
Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: Perched at a depth of 1.5 to 2.0 feet in late winter and early spring
Flooding: Occasional, for brief periods; mainly during winter and early spring
Root zone: Somewhat limited by the seasonal high water table during winter and early spring unless water-tolerant species are planted

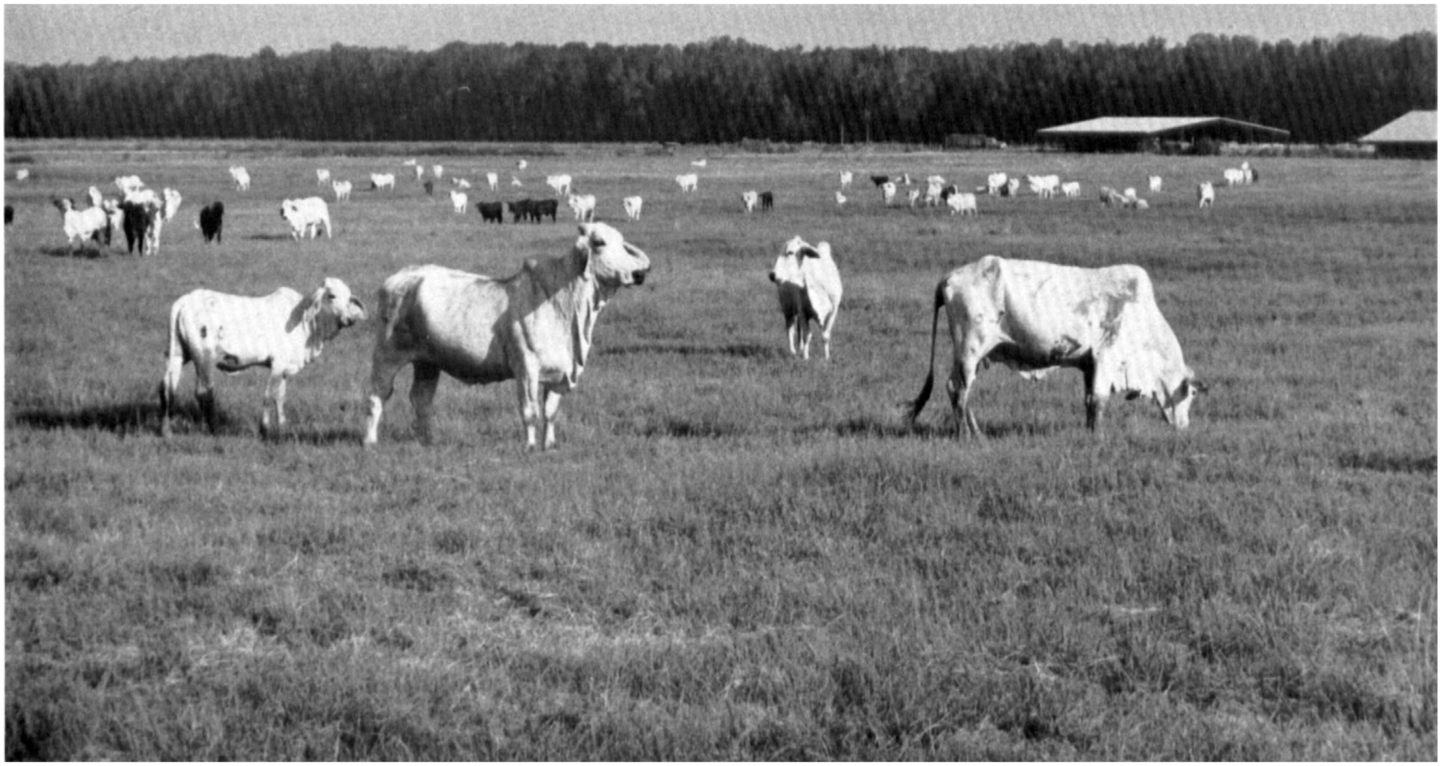

Figure 8.—Bahiagrass pasture in an area of Quitman loam, 0 to 2 percent slopes.

Tilth: Good, but the soil can be worked more easily during the drier periods.

The typical sequence, depth, and composition of the layers of the Jena soil are as follows—

Surface layer:
0 to 5 inches; dark grayish brown fine sandy loam

Subsoil:
5 to 14 inches; dark yellowish brown silt loam
14 to 32 inches; yellowish brown silt loam

Underlying material:
32 to 42 inches; brownish yellow fine sandy loam
42 to 52 inches; light yellowish brown fine sandy loam
52 to 62 inches; yellowish brown fine sandy loam

Important properties of the Jena soil—

Permeability: Moderate
Available water capacity: Moderate
Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of more than 6 feet
Flooding: Occasional, for very brief periods; mainly during winter and early spring
Root zone: Deep; can be easily penetrated by plant roots
Tilth: Good; the soil can be worked throughout a wide range in moisture content.

The typical sequence, depth, and composition of the layers of the Trebloc soil are as follows—

Surface layer:
0 to 5 inches; dark grayish brown silt loam

Subsoil:
5 to 18 inches; light brownish gray silt loam that has grayish brown mottles
18 to 24 inches; mottled grayish brown and dark grayish brown silty clay loam
24 to 60 inches; grayish brown and gray silty clay loam that has brown and yellowish red mottles

Important properties of the Trebloc soil—

Permeability: Moderately slow
Available water capacity: High

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 0.5 to 1.0 foot in winter and early spring
Flooding: Frequent, for long periods; mainly during winter and early spring
Root zone: Deep, but limited by the seasonal high water table during winter and early spring unless water-tolerant species are planted
Tilth: Good, but the soil can be worked more easily during the drier seasons.

Most of the acreage of this map unit is used as woodland.

The Quitman and Jena soils are well suited to row crops, small grain, and truck crops, but the Trebloc soil is poorly suited. The seasonal wetness and the hazard of flooding are the main management concerns. Adequate cropping systems are needed. Aligning crop rows and using surface field ditches help to remove excess surface water. Returning crop residue to the soil improves tilth.

The Quitman and Jena soils are well suited to grasses and legumes for hay and pasture, and the Trebloc soil is moderately suited. Overgrazing or grazing when the soil is too wet causes compaction and reduces the rate of water infiltration. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

These soils are well suited to woodland. Trees preferred for planting on the Quitman soil include loblolly pine, American sycamore, yellow-poplar, and sweetgum. An equipment limitation and plant competition are management concerns. A surface drainage system and good seedbed preparation reduce the seedling mortality rate. Trees preferred for planting on the Jena soil include loblolly pine, American sycamore, cherrybark oak, and Shumard oak. Plant competition is a moderate limitation on this soil. Trees preferred for planting on the Trebloc soil include green ash, loblolly pine, and sweetgum. Seedling mortality and plant competition are severe limitations, and the equipment limitation is a moderate concern. Proper site preparation helps to control undesirable species, and spraying controls subsequent growth. Using special equipment and logging during the drier seasons help to overcome the problems caused by wetness.

The Quitman soil has good potential for use as habitat for openland wildlife, and the Jena and Trebloc soils have fair potential. The Quitman and Jena soils have good potential for use as habitat for woodland wildlife, and the Trebloc soil has fair potential. The Quitman and Jena soils have poor potential for use as habitat for wetland wildlife, and the Trebloc soil has good potential.

Flooding is the main management concern on sites for residential and small commercial buildings, local roads, and septic tank absorption fields and subsurface waste-water disposal systems. Flood-control measures are generally not feasible because of the high cost and some risk of property damage. The seasonal wetness also is a concern affecting building sites, local roads, and subsurface waste-water disposal systems. Also, the slow permeability is a severe limitation in areas of the Quitman and Trebloc soils. Using raised fill for construction sites and roadbeds helps to overcome the flooding and the seasonal wetness. An alternative site should be selected for septic tank absorption fields and subsurface waste-water disposal systems, or an alternative or specially designed system should be used.

The Quitman and Jena soils are in capability subclass IIw, and the Trebloc soil is in capability subclass Vw. The woodland ordination symbol is 10W for the Quitman and Trebloc soils and 11A for the Jena soil.

Ro—Rosebloom silt loam, frequently flooded. This nearly level, poorly drained soil formed in silty alluvium. It is on flood plains. Most areas are flooded several times each year, mainly from January through March. The flooding is of brief to very long duration. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 5 inches; dark grayish brown silt loam that has light brownish gray mottles

Subsoil:
5 to 10 inches; light brownish gray silt loam
10 to 32 inches; gray silt loam
32 to 44 inches; gray silty clay loam
44 to 60 inches; gray silty clay loam that has light olive brown mottles

Included with this soil in mapping are small areas of Cascilla and Jena soils. These soils are well drained and are on flood plains. Cascilla soils are silty. Jena soils are loamy. Also included are small areas of soils in depressions on uplands and on flood plains that are ponded for long periods.

Important properties of the Rosebloom soil—

Soil reaction: Very strongly acid or strongly acid

throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderate

Available water capacity: Very high

Surface runoff: Slow

Erosion hazard: Slight

Seasonal high water table: At a depth of 1 foot from January through March

Flooding: Frequent, for brief to very long periods following heavy rains in winter and early spring

Root zone: Deep, but limited by the seasonal high water table at or near the surface during the winter unless water-tolerant species are planted

Tilth: Fair, but the soil can be worked more easily during the drier seasons.

Most areas are used as woodland. A small acreage is used as pasture.

This soil is poorly suited to row crops, truck crops, and small grain because of wetness and frequent flooding. Installation of a specially designed drainage and levee system can partially overcome the problems caused by wetness and flooding. Regulations concerning drainage should be investigated before any drainage work is considered.

This soil is moderately suited to pasture grasses that are tolerant of wetness. Drainage ditches help to remove surface water during the growing season, but plant stands can be damaged or destroyed by flooding early in the growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Bottom-land hardwoods and swamp hardwoods are the dominant trees. Trees preferred for planting include green ash, loblolly pine, eastern cottonwood, and sweetgum. Flooding and wetness are the main management concerns affecting forest management. The use of equipment is severely restricted by the wetness and the flooding. Also, plant competition is a severe problem, and the seedling mortality rate is moderate. If pine trees are planted, site preparation is needed to control competition from undesirable plants.

This soil has good potential for use as habitat for wetland wildlife (fig. 9). It has fair potential for use as habitat for openland and woodland wildlife.

This soil is not suited to use as a site for residential or small commercial buildings, septic tank absorption fields, or subsurface waste-water disposal systems because of the wetness and the frequent flooding. Flood-control measures generally are not feasible because of the high cost. Low strength is a severe limitation on sites for local roads, but special design and proper construction can help to overcome this limitation. Alternative sites should be selected for septic tank absorption fields and subsurface waste-water disposal systems.

The capability subclass is Vw. The woodland ordination symbol is 9W.

RuB2—Ruston fine sandy loam, 2 to 5 percent slopes, eroded. This gently sloping, well drained soil formed in loamy sediments. It is on ridgetops in the uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 7 inches; dark brown and yellowish brown fine sandy loam

Subsoil:

7 to 14 inches; red loam

14 to 22 inches; red loam that has yellowish brown mottles

22 to 39 inches; yellowish red and yellowish brown sandy loam

39 to 52 inches; red sandy clay loam

52 to 62 inches; red sandy clay loam that has strong brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of the moderately well drained Ora and Savannah soils. These soils are loamy. They have a fragipan. Ora soils are in landscape positions similar to those of the Ruston soil. Savannah soils are on terraces and uplands. Also included are small areas of severely eroded soils that have a surface layer made up mostly of subsoil material and small areas of soils that have sandy loam or loamy sand in the lower part of the subsoil.

Important properties of the Ruston soil—

Soil reaction: Very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderate

Available water capacity: Moderate

Surface runoff: Medium

Erosion hazard: Moderate

Seasonal high water table: At a depth of more than 6 feet

Figure 9.—This slough in an area of Rosebloom silt loam, frequently flooded, has good potential for use as habitat for wetland wildlife.

Flooding: None
Root zone: Deep; extends to a depth of 60 inches or more
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture or cropland. A small

acreage is used as woodland.

This soil is well suited to row crops, truck crops, and small grain. High yields can be obtained if proper management is used and fertility is maintained. The hazard of erosion is the main management concern. Crop rotations, conservation tillage, grassed waterways, terraces, and contour farming can help to control erosion in cultivated areas. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Controlling grazing when the soil is too wet helps to minimize surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to a variety of trees. Trees preferred for planting include cherrybark oak, loblolly pine, and white oak. If pine trees are planted, site preparation is needed to control undesirable plants. Harvesting timber only during the drier seasons helps to prevent the formation of ruts and minimizes surface compaction.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil is well suited to use as a site for residential and commercial buildings. During and after construction, establishing vegetation on the building site helps to control erosion and prevent offsite sedimentation. Special design and proper construction can help to minimize the hazard of erosion. If properly designed and installed, septic tank absorption fields and subsurface waste-water disposal systems generally function satisfactorily on this soil.

The capability subclass is IIe. The woodland ordination symbol is 9A.

RuC2—Ruston fine sandy loam, 5 to 8 percent slopes, eroded. This sloping, well drained soil formed in loamy sediments. It is on hillsides in the uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 5 inches; dark brown fine sandy loam

Subsoil:

5 to 31 inches; red sandy clay loam that has yellowish brown mottles

31 to 48 inches; yellowish brown and yellowish red sandy loam

48 to 62 inches; red sandy clay loam

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small, intermingled areas of the moderately well drained Ora and Savannah soils. These soils are loamy. They have a fragipan. Ora soils are in landscape positions similar to those of the Ruston soil. Savannah soils are on terraces and uplands. Also included are some small areas of severely eroded soils that have a surface layer made up of subsoil material.

Important properties of the Ruston soil—

Soil reaction: Very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderate

Available water capacity: Moderate

Surface runoff: Rapid

Erosion hazard: Severe

Seasonal high water table: At a depth of more than 6 feet

Flooding: None

Root zone: Deep; extends to a depth of 60 inches or more

Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as pasture or cropland. A small acreage is used as woodland.

This soil is moderately suited to row crops, truck crops, and small grain. Erosion is a severe hazard. Conservation tillage, grassed waterways, terraces, contour stripcropping, and contour farming help to control erosion in cultivated areas. Crop rotations that include grasses and legumes help to maintain the content of organic matter, improve soil moisture, and help to control erosion. Returning crop residue to the soil improves fertility and tilth and minimizes crusting and surface compaction after hard rains.

This soil is well suited to grasses and legumes for hay and pasture. Controlling grazing when the soil is too wet helps to minimize surface compaction. Proper stocking rates, controlled grazing during wet periods, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to a variety of trees. Few limitations affect woodland use and management. Trees preferred for planting include white oak, cherrybark oak, and loblolly pine. If pine trees are planted, site preparation is needed to control undesirable species. Harvesting timber only during the drier seasons helps to

prevent the formation of ruts and minimizes surface compaction. Harvesting methods that minimize the hazard of erosion should be used.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil is well suited to residential development. The slope is a moderate concern on sites for small commercial buildings. Special design can help to overcome this limitation. Erosion-control measures are needed during construction to prevent offsite sedimentation. If properly designed and installed, septic tank absorption fields and subsurface waste-water disposal systems generally function satisfactorily on this soil.

The capability subclass is IIIe. The woodland ordination symbol is 9A.

SaB2—Savannah loam, 2 to 5 percent slopes, eroded. This gently sloping, moderately well drained soil formed in loamy sediments. It is on ridgetops in dissected uplands and on terraces. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 7 inches; dark brown and brown loam

Subsoil:
7 to 26 inches; yellowish brown loam
26 to 41 inches; a firm, brittle, and compact fragipan of light yellowish brown loam that has light brownish gray and yellowish brown mottles
41 to 47 inches; a firm, brittle, and compact fragipan of yellowish brown loam
47 to 54 inches; a firm, brittle, and compact fragipan of yellowish brown loam that has light yellowish brown and red mottles
54 to 62 inches; a firm, brittle, and compact fragipan of light yellowish brown sandy loam that has strong brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Ora, Providence, and Ruston soils. These soils are on ridgetops. The loamy Ora soils and the silty Providence soils are moderately well drained. Ruston soils are well drained. They do not have a fragipan. Also included are a few small areas of severely eroded soils that have a surface layer made up mostly of subsoil material and small areas of soils that have slopes of more than 5 percent.

Important properties of the Savannah soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate above the fragipan and moderately slow in the fragipan
Available water capacity: Moderate
Surface runoff: Medium
Erosion hazard: Moderate
Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet in winter and early spring
Flooding: None
Root zone: Restricted by the compact, brittle fragipan at a depth of 1.5 to 3.0 feet
Tilth: The surface layer is friable and can be easily tilled throughout a fairly wide range in moisture content, but it tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is well suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. Seasonal wetness, the restricted root zone, and the moderate available water capacity also are limitations. Conservation tillage, terraces, grassed waterways, and contour farming help to control erosion in cultivated areas. Crop rotations increase the content of organic matter and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and American sycamore. The seasonal wetness restricts the use of equipment. Using special equipment and logging only during the drier seasons help to overcome the problems caused by wetness and minimize surface compaction and the formation of ruts. Plant competition is moderate. If pine trees are planted, proper site preparation can help to control undesirable plants and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Wetness caused by the seasonal high water table is

a moderate limitation on sites for residential and small commercial buildings and for local roads. Low strength is a moderate limitation on sites for local roads. Special design and proper engineering techniques help to overcome these limitations. The seasonal wetness and the moderately slow permeability in the fragipan severely limit the use of this soil for septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIe. The woodland ordination symbol is 9W.

SaC2—Savannah loam, 5 to 8 percent slopes, eroded. This moderately sloping, moderately well drained soil formed in loamy sediments. It is on side slopes in undulating to rolling uplands and on ridgetops in hilly, dissected uplands. It has a fragipan.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 4 inches; dark brown loam

Subsoil:

4 to 20 inches; yellowish brown loam that has light yellowish brown mottles

20 to 36 inches; a firm, brittle, and compact fragipan of yellowish brown loam that has light yellowish brown and strong brown mottles

36 to 55 inches; a firm, brittle, and compact fragipan of yellowish brown clay loam that has light brownish gray and yellowish red mottles

55 to 72 inches; a firm, brittle, and compact fragipan of yellowish brown sandy clay loam that has light brownish gray, strong brown, and yellowish red mottles

72 to 80 inches; a very firm, brittle, and compact fragipan of yellowish brown loam that has light yellowish brown and strong brown mottles

In most areas, part of the original surface layer has been removed by erosion and tillage has mixed the remaining topsoil with the subsoil. In some small areas all of the plow layer is the original topsoil, and in other areas the plow layer is essentially in the subsoil. A few rills and shallow gullies are in some areas.

Included with this soil in mapping are small areas of Ora, Providence, and Ruston soils. These soils are on ridgetops. The loamy Ora soils and the silty Providence soils are moderately well drained. Ruston soils are well drained. They do not have a fragipan. Also included are small areas of severely eroded soils that have a surface layer made up of subsoil material and small areas of soils that have slopes of less than 5 percent.

Important properties of the Savannah soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderate above the fragipan and moderately slow in the fragipan

Available water capacity: Moderate

Surface runoff: Medium

Erosion hazard: Severe

Seasonal high water table: Perched above the fragipan at a depth of 1.5 to 3.0 feet in winter and early spring

Flooding: None

Root zone: Restricted by the compact, brittle fragipan at a depth of 1.5 to 3.0 feet

Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content. It tends to crust and pack after hard rains.

Most areas are used as cropland or pasture. A small acreage is used as woodland.

This soil is moderately suited to a variety of row crops, truck crops, and small grain. The hazard of erosion is a major management concern. The restricted root zone, the moderate available water capacity, and the seasonal wetness also are limitations. Conservation tillage, cover crops, grassed waterways, terraces, contour stripcropping, vegetated filter strips, and contour farming help to control erosion in cultivated areas. Crop rotations help to control erosion, increase the content of organic matter, and improve soil moisture. Returning crop residue to the soil improves fertility and tilth and minimizes crusting.

This soil is well suited to grasses and legumes for hay and pasture. Using the soil for hay and pasture helps to control erosion. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include sweetgum, loblolly pine, and American sycamore. Seasonal wetness restricts the use of equipment. Plant competition is moderate. Using equipment only during the drier periods reduces the hazard of erosion and minimizes surface compaction and the formation of ruts. If pine trees are planted, site preparation can help to control competition from undesirable species.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

This soil is moderately suited to use as a site for residential and small commercial buildings. The

seasonal wetness is a moderate limitation affecting residential uses, and the wetness and the slope are moderate limitations on sites for small commercial buildings. Low strength and the wetness are moderate limitations on sites for local roads. Special design and proper construction can help to overcome these limitations. The moderately slow permeability in the fragipan and the seasonal wetness severely limit the use of this soil for septic tank absorption fields and subsurface waste-water disposal systems. Special design of subsurface waste-water disposal systems can help to overcome these limitations, or alternative systems can be used.

The capability subclass is IIIe. The woodland ordination symbol is 9W.

SdD2—Smithdale fine sandy loam, 8 to 15 percent slopes, eroded. This sloping or strongly sloping, well drained soil formed in loamy sediments. It is on hillsides and along incised drainageways in dissected uplands.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 6 inches; dark brown fine sandy loam

Subsoil:
6 to 29 inches; red sandy clay loam that has reddish yellow mottles
29 to 60 inches; red sandy loam that has reddish yellow mottles

In some areas, the original surface layer has been removed and the existing surface layer consists entirely of material from the subsoil. A few rills and shallow gullies are in most areas.

Included with this soil in mapping are small areas of Ruston soils. The loamy Ruston soils are well drained and are on the upper parts of hillslopes in the uplands. Also included are small areas of soils that have a sandy surface layer more than 20 inches thick and areas of soils that have slopes of more than 15 percent.

Important properties of the Smithdale soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: 60 inches or more
Tilth: The surface layer is friable and can be easily tilled throughout a wide range in moisture content.

Most areas are used as pasture or woodland.

This soil is poorly suited to row crops, truck crops, and small grain because of the slope and the severe hazard of erosion. Conservation tillage, grassed waterways, crop rotations, and contour farming help to control erosion in cultivated areas.

This soil is moderately suited to grasses and legumes for hay and pasture. The slope, the hazard of erosion, and the moderate available water capacity are the main management concerns. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Few limitations affect forest management. Trees preferred for planting include loblolly pine and southern red oak.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has very poor potential for use as habitat for wetland wildlife.

The slope is a moderate limitation on sites for residential buildings and local roads and a severe limitation on sites for small commercial buildings. Special design and proper engineering techniques can help to overcome the slope. The slope is a moderate limitation on sites for septic tank absorption fields and subsurface waste-water disposal systems. Installing field lines on the contour helps to overcome this limitation.

The capability subclass is IVe. The woodland ordination symbol is 9A.

SdF—Smithdale fine sandy loam, 15 to 35 percent slopes. This steep, well drained soil formed in loamy sediments. It is on hillsides in highly dissected uplands with prominent local relief. The landscape is characterized by narrow ridgetops, steep side slopes, and narrow drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 4 inches; dark grayish brown fine sandy loam

Subsurface layer:
4 to 10 inches; yellowish brown fine sandy loam

Subsoil:
10 to 37 inches; red sandy clay loam
37 to 48 inches; red sandy loam
48 to 62 inches; yellowish red sandy loam that has pockets of brownish sand grains

Included with this soil in mapping are small areas of soils that have slopes of less than 15 percent. These soils are on the upper part of hillslopes. Also included are small areas of soils that have a sandy surface layer

more than 20 inches thick on foot slopes and low interfluve ridges.

Important properties of the Smithdale soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: 60 inches or more

Most areas are used as woodland. A small acreage is used as pasture.

This soil is not suited to row crops, truck crops, and small grain because of the rapid runoff rate, the slope, and the severe hazard of erosion. Maintaining a permanent cover of grasses and legumes or trees helps to control erosion.

This soil is poorly suited to grasses and legumes for hay and pasture because of the slope, the severe hazard of erosion, and the moderate available water capacity. Plants are difficult to establish and maintain. The slope restricts the use of equipment.

This soil is suited to woodland. Oaks, pines, and hickories are the dominant native trees. Trees preferred for planting include loblolly pine. The use of equipment is moderately restricted because of the slope. The hazard of erosion is a moderate management concern. Roads and log landings can be protected from erosion by constructing diversions and by vegetating cuts and fills. Harvesting methods that minimize the hazard of erosion are needed to prevent the formation of gullies and offsite sedimentation.

This soil has good potential for use as habitat for woodland wildlife and fair potential for use as habitat for openland wildlife. It has very poor potential for use as habitat for wetland wildlife.

The slope is a severe limitation on sites for residential and small commercial buildings and for local roads. Special design and engineering techniques and proper construction can help to overcome this limitation. The slope is a severe limitation on sites for septic tank absorption fields and subsurface waste-water disposal systems. In areas that have slopes of less than 30 percent, field lines can be installed on the contour. In areas that have slopes of more than 30 percent, alternative waste-water disposal systems are needed because effluent from subsurface disposal systems can surface in downslope areas and contaminate ground water.

The capability subclass is VIIe. The woodland ordination symbol is 9R.

SL—Smithdale sandy loam, 5 to 40 percent slopes. This well drained soil formed in loamy material. It is mainly on hillsides in the uplands. The landscape is characterized by narrow to broad ridgetops and sloping to steep hillsides. Most of the slopes range from 12 to 35 percent. The slopes are irregular in shape and are dissected by a dendritic drainage pattern.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:
0 to 4 inches; dark brown sandy loam

Subsurface layer:
4 to 17 inches; yellowish brown sandy loam

Subsoil:
17 to 55 inches; red sandy clay loam that has strong brown mottles in the lower part
55 to 62 inches; red sandy loam that has pockets of brownish yellow sand grains

Included with this soil in mapping are areas of Ora, Petal, Ruston, Kirkville, and Mantachie soils. The moderately well drained Ora soils are on ridgetops. They have a fragipan. Petal soils are on benches and foot slopes. They have a high content of clay in the subsoil. The loamy Ruston soils are on some of the broader ridgetops. Kirkville soils are moderately well drained. Mantachie soils are somewhat poorly drained. Also included are areas of soils on narrow flood plains and in drainageways and areas of soils, on hillsides, that have a sandy surface layer more than 20 inches thick. Included soils make up about 25 percent of the map unit.

Important properties of the Smithdale soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderate
Available water capacity: Moderate
Surface runoff: Medium to very rapid
Erosion hazard: Severe
Seasonal high water table: At a depth of more than 6 feet
Flooding: None
Root zone: 60 inches or more

Most areas are used as woodland. A small acreage is used for grasses and legumes, which are grown for hay and pasture.

This soil is not suited to row crops, truck crops, and small grain because of the slope. The less steep areas

on narrow, winding ridgetops are generally too small and irregular in shape for the efficient use of farm machinery. Also, it is difficult to prevent washouts and gullying if access roads are made on steep slopes. The hazard of erosion is severe in the steeper areas. Maintaining a permanent cover of vegetation, especially trees, helps to control erosion, but the gently sloping and sloping ridgetops can be used for pasture and hay. Maintaining a good cover of grass can also help to control erosion. Proper stocking rates, controlled grazing, and weed and brush control can reduce the runoff rate and the hazard of erosion.

This soil is well suited to woodland. Trees preferred for planting include loblolly pine. The slope and the hazard of erosion are management concerns. The slope restricts the use of equipment. Good harvesting practices can minimize the hazard of erosion. Roads should run parallel to the slope because gullies tend to form along logging roads. Roads and log landings can be protected from erosion by constructing diversions and by vegetating cuts and fills. Conventional harvesting methods can be used in most areas, but they are difficult to use in the steeper areas.

This soil has good potential for use as habitat for woodland wildlife and fair potential for use as habitat for openland wildlife. It has very poor potential for use as habitat for wetland wildlife.

Generally, the slope is a severe limitation on sites for residential and small commercial buildings and for local roads, but the soil is suited to residential uses in some gently sloping or sloping areas on ridgetops. Erosion is a hazard on sites for local roads. Vegetating cuts and fills can reduce the hazard of erosion. Generally, the slope is a severe limitation on sites for septic tank absorption fields and waste-water disposal systems. In areas that have slopes of 15 to 30 percent, this limitation can be partially overcome by installing field lines on the contour or by installing field lines across the slope and land shaping. In areas that have slopes of more than 30 percent, an alternative waste-water disposal system is needed because effluent from subsurface systems can contaminate ground water in downslope areas. In areas that have slopes of less than 15 percent, subsurface waste-water disposal systems generally function satisfactorily if they are properly designed and installed.

The capability subclass is VIIe. The woodland ordination symbol is 9R.

StA—Stough loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil formed in loamy sediments. It is on terraces and on narrow flood plains along drainageways.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 5 inches; dark grayish brown loam

Subsurface layer:

5 to 9 inches; pale brown loam that has dark yellowish brown and grayish brown mottles

Subsoil:

9 to 17 inches; yellowish brown loam that has light brownish gray and light yellowish brown mottles

17 to 34 inches; yellowish brown loam that has dark yellowish brown and light brownish gray mottles

34 to 45 inches; yellowish brown loam that has light brownish gray and strong brown mottles

45 to 62 inches; light yellowish brown sandy loam that has light brownish gray and yellowish brown mottles

Included with this soil in mapping are small areas of the loamy Quitman and Savannah soils. Quitman soils are somewhat poorly drained and are on terraces. Savannah soils are moderately well drained and are on flood plains and terraces. Also included are areas of soils, along drainageways, that are occasionally flooded for very brief periods and some areas of soils, in depressions, that are ponded during wet seasons.

Important properties of the Stough soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed

Permeability: Moderately slow

Available water capacity: Moderate

Surface runoff: Slow

Erosion hazard: Moderate

Seasonal high water table: At a depth of 1.0 to 1.5 feet in winter and early spring

Flooding: None

Root zone: Restricted by the seasonal high water table at a depth of about 1.0 to 1.5 feet in winter and early spring

Tilth: The surface layer is friable and can be easily worked during the drier seasons, but it tends to crust and pack after hard rains.

Most areas are used as woodland or pasture. A small acreage is used as cropland.

This soil is well suited to a variety of row crops, truck crops, and small grain. Seasonal wetness is the main limitation affecting crop production. It delays planting in the spring and frequently results in poor stands. Proper row arrangement and surface field ditches can help to remove excess surface water in low areas. Using a system of conservation tillage, planting cover crops, including grasses and legumes in the cropping system,

and returning crop residue to the soil improve fertility and tilth and minimize crusting and surface compaction.

This soil is well suited to grasses and legumes for hay and pasture. The wetness is the major limitation affecting forage production. Prolonged wet periods can destroy or weaken stands of pasture grasses. Also, forage production declines significantly during droughty periods in summer. Restricting grazing when the soil is too wet minimizes surface compaction. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Trees preferred for planting include loblolly pine and sweetgum. The seasonal wetness restricts the use of equipment. Using special equipment and logging only during the drier seasons help to overcome the problems caused by wetness, help to prevent the formation of ruts, and minimize surface compaction. Plant competition is severe. If pine trees are planted, proper site preparation can help to control undesirable species and spraying controls subsequent growth.

This soil has good potential for use as habitat for openland wildlife and woodland wildlife. It has fair potential for use as habitat for wetland wildlife.

The wetness is a severe limitation on sites for residential and small commercial buildings. It is a moderate limitation on sites for local roads. Using raised fill material on construction sites and roadbeds, using special design and engineering techniques, and using proper construction methods help to overcome the wetness. The moderately slow permeability and the seasonal high water table are severe limitations on sites for septic tank absorption fields and subsurface waste-water disposal systems. An alternative site can be selected, or a specially designed alternative system can be used.

The capability subclass is IIw. The woodland ordination symbol is 9W.

Tb—Trebloc silt loam, frequently flooded. This nearly level, poorly drained soil formed in sediments that have a high content of silt. It is in broad depressions on terraces and on flood plains. Most areas are flooded several times each year. Most of the flooding lasts for several days, but some low areas are inundated for longer periods. Slopes range from 0 to 2 percent.

The typical sequence, depth, and composition of the layers of this soil are as follows—

Surface layer:

0 to 5 inches; dark grayish brown silt loam that has yellowish brown mottles

Subsoil:

5 to 22 inches; light brownish gray silt loam that has yellowish brown and dark brown mottles

22 to 30 inches; gray silty clay loam that has red mottles

30 to 38 inches; grayish brown silty clay loam that has light brownish gray, strong brown, and red mottles

38 to 50 inches; light brownish gray silty clay loam that has brown mottles

50 to 62 inches; light brownish gray silty clay loam that has strong brown mottles

Included with this soil in mapping are small areas of Quitman, Rosebloom, and Stough soils. The loamy Quitman soils are somewhat poorly drained and are on terraces. The silty Rosebloom soils are poorly drained and are on flood plains. The loamy Stough soils are somewhat poorly drained and are on terraces and in drainageways. Also included are a few small areas of poorly drained soils on flood plains that have a surface layer of loam or fine sandy loam and a few areas, southwest of Magee, of ponded soils that are in depressions on uplands.

Important properties of the Trebloc soil—

Soil reaction: Very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed
Permeability: Moderately slow
Available water capacity: High
Surface runoff: Slow
Erosion hazard: Slight
Seasonal high water table: At a depth of 0.5 to 1.0 foot
Flooding: Frequent, for brief or long periods following heavy rains in winter and early spring
Root zone: Deep, but limited by the seasonal high water table at or near the surface during the winter and spring
Tilth: Generally fair; the soil can be worked more easily during the drier seasons.

Most areas are used as woodland. A small acreage is used as pasture.

This soil is poorly suited to row crops, truck crops, and small grain because of the wetness and the frequent flooding. Installing a specially designed drainage and levee system can partially overcome the problems caused by wetness and flooding. Regulations concerning drainage should be investigated before any drainage work is considered.

This soil is moderately suited to pasture grasses that are tolerant of wetness. Drainage ditches can remove surface water during the growing season. Plant stands can be damaged or destroyed by flooding early in the

growing season. Overgrazing or grazing when the soil is too wet causes surface compaction and poor tilth. Proper stocking rates, controlled grazing, and weed and brush control help to keep the pasture in good condition.

This soil is well suited to woodland. Bottom-land hardwoods are the dominant trees, and swamp hardwoods are in the wetter, low areas. Trees preferred for planting include green ash, loblolly pine, and sweetgum. The flooding and the wetness are the main limitations. The use of equipment is limited to the drier seasons. Also, seedling mortality and plant competition are severe. If pine trees are planted, site preparation is needed to control competition from undesirable species.

This soil has fair potential for use as habitat for openland and woodland wildlife. It has good potential for use as habitat for wetland wildlife.

This soil is not suited to use as a site for residential or small commercial buildings, local roads, septic tank absorption fields, or subsurface waste-water disposal systems because of the wetness and the frequent flooding. Also, the restricted permeability is a management concern on sites for waste-water disposal systems. Flood-control measures generally are not feasible because of the high cost. Low strength is a severe limitation on sites for local roads. Special design and proper construction techniques help to overcome this limitation. Alternative sites should be selected for septic tank absorption fields and subsurface waste-water disposal systems.

The capability subclass is Vw. The woodland ordination symbol is 10W.

Prime Farmland

In this section, prime farmland is defined and the soils in Simpson County that are considered prime farmland are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent.

About 122,640 acres in Simpson County, or about 32 percent of the land area, meets the requirements for prime farmland. The map units that are considered prime farmland in Simpson County are listed in table 5. This list does not constitute a recommendation for a particular land use. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units."

Soils that are frequently flooded during the growing season qualify as prime farmland only in areas where this limitation has been overcome by flood-control measures. If applicable, the need for these measures is indicated in parentheses after the map unit name in table 5. Onsite evaluation is necessary to determine whether or not the flooding has been overcome by corrective measures.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

James S. Parkman, conservation agronomist, Natural Resources Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Natural Resources Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

The primary purpose of cultivating is to reduce or eliminate competition from undesirable plants. Cultivation of the soil also causes leaching of plant nutrients and increases the hazard of erosion. Therefore, suitable cropping systems are needed to maintain the content of organic matter, to reduce the hazard of erosion, and to increase the level of fertility.

Maintaining a cover of close-growing or sod crops, planting annual cover crops, growing legumes in sequence with row crops, and using a crop rotation that includes high-residue crops help to maintain the content of organic matter, reduce the hazard of erosion, and improve fertility. The number of years that a row crop is grown depends on the type of soil, the slope, and the degree of erosion hazard. Crop residue should be left on the surface after harvest, or it should be disked into the surface layer if the soils are subject to flooding.

Applications of fertilizer are needed on all cropland in the county. Lime also is needed on most of the soils. The need for fertilizer and lime varies with the soils and the type of crop. Soil tests should be used to determine the correct amount and type of fertilizer. The local office of the Cooperative Extension Service can provide information about the proper kinds and amounts of lime and fertilizer to apply.

Some of the soils in the county have inadequate surface drainage and internal drainage. Drainage tile or surface field ditches may be needed on these soils. Diversions are needed to protect bottom land from excessive runoff from the higher adjacent soils. Contour

farming helps to control erosion and conserves moisture in gently sloping areas.

A well managed pasture consists of a good vegetative cover and vigorous root systems. Good pasture management helps to control erosion, provides feed and forage for livestock, and increases the content of organic matter in the soil.

The soils in Simpson County are suited to a wide variety of grasses and legumes for hay and pasture. Some soils are better suited than others. The type of livestock enterprise and the individual needs of the farmer should also be considered.

Perennial grasses that are well adapted to the soils in the county include common bermudagrass, Dallisgrass, improved bermudagrass, bahiagrass, and tall fescue. Legumes that are well adapted include white clover, crimson clover, arrowleaf clover, and annual lespedeza.

Applications of fertilizer and lime are beneficial to all pastures. The amount and type of fertilizer and the frequency of application should be based on the results of soil tests. Proper stocking rates, rotation grazing, and other management practices improve the growth of grasses and legumes and result in better forage production.

Erosion is the major concern on most of the cropland and pasture in the county. It is a hazard in areas where the slope is more than 2 percent.

Loss of the surface layer by erosion is damaging for two reasons. First, productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging in soils that have a layer in or below the subsoil, such as a fragipan, that limits the depth of the root zone. Providence, Ora, and Savannah soils are examples of soils that have a fragipan. Second, erosion on farmland results in the pollution of streams by sediment. Control of erosion minimizes this pollution and improves the quality of water for municipal and recreational uses and for fish and wildlife.

Soil drainage is the major management need on some of the acreage used for crops and pasture in the county. Unless artificial drainage is provided, the poorly drained and somewhat poorly drained soils are so wet that crops are damaged in most years. For example, a drainage system is needed in areas of Rosebloom and Trebloc soils. Regulations concerning drainage should be investigated before new drainage work is considered.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The

numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production. There are no class VIII soils in Simpson County.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

J. Alan Holditch, forester, Natural Resources Conservation Service, helped prepare this section.

Soils vary in their ability to produce trees. Available water capacity and depth of the root zone have major effects on tree growth. Fertility and texture also influence tree growth. Elevation, aspect, and climate determine the kinds of trees that can grow on a site.

About 240,000 acres in Simpson County, or 64 percent of the total acreage, is woodland. About 25 percent of the woodland is commercially owned *(12).*

Originally, the soils on flood plains along streams and minor drainageways supported bottom-land hardwoods. The better drained soils supported mixed hardwoods, such as yellow-poplar, hackberry, elms, green ash, sweetgum, overcup oak, and water hickory. Poorly drained soils in depressions and sloughs supported stands dominated by water-tolerant species, such as cypress, tupelo gum, and red maple.

In the natural successional pattern, a pine-dominated forest is replaced by a climax forest type dominated by oaks and other hardwoods. Pines invade abandoned farmland and become established. Hardwoods invade the pine stands and gradually increase in number because the pines cannot successfully compete with them for light and moisture. Over time the pine-dominated stands become oak-pine stands, which are gradually replaced by stands dominated by oaks and other hardwoods.

The present forest cover types in Simpson County are the result of disturbances, such as selective cutting, management practices, fire, disease, insect infestations, and browsing livestock. The existing forest cover may be subdivided into forest types based on species composition, site quality, or age *(9).* Such types have distinct characteristics and generally require separate treatment. As used in this survey, forest types are stands of trees of similar character, composed of the same species, and growing under similar ecological and biological conditions. Each forest type is named for the dominant tree species.

The loblolly-shortleaf pine forest type is the most important in Simpson County. This type includes the southern yellow pines (except longleaf pine and slash pine) and eastern redcedar. Commonly associated trees include oak, hickory, sweetgum, and blackgum. In 1987, the extent of this forest type was about 80,000 acres, or 33 percent of the county.

The oak-pine forest type is second in importance. Softwoods make up 25 to 50 percent of the stand. Commonly associated trees include hickory, sweetgum, blackgum, and yellow-poplar. In 1987, the extent of this forest type was 60,100 acres, or 25 percent of the county.

The oak-hickory forest type is third in importance. In 1987, the extent of this forest type was 53,400 acres, or 22 percent of the county. In upland areas in Simpson County, the prevalent forest type, or climax forest, is classified as oak-hickory-pine *(14).* The major oak-hickory species include white oak, black oak, southern

red oak, chestnut oak, scarlet oak, mockernut hickory, shagbark hickory, and bitternut hickory. Associated hardwoods include yellow-poplar, ashes, elms, red maple, blackgum, and black cherry. Shortleaf pine and loblolly pine are a significant component of the oak-hickory-pine type in some areas, but much of the present upland cover represents transitional stages in the successional pattern. The stand is classified as oak-pine if pines make up 25 to 50 percent of the trees.

The oak-gum-cypress forest type is fourth in importance. It includes bottom-land species, such as tupelo, blackgum, sweetgum, oak, and baldcypress. Commonly associated trees include eastern cottonwood, black willow, ash, hackberry, maple, and elm. The stand is classified as oak-pine if pines make up 25 to 50 percent of the trees. In 1987, the extent of the oak-gum-cypress forest type was 46,700 acres, or 20 percent of the county. Most of the acreage is located on flood plains along the major streams and their tributaries.

Climate and the soil are the most important environmental factors influencing tree growth. The soil is a reservoir of moisture and provides most of the essential elements required for growth. Also, soil provides the medium in which a tree is anchored. The many characteristics of soil, such as chemical composition, texture, structure, depth, and landscape position, influence tree growth through their effects on the supply of moisture and nutrients.

The landscape position of a soil strongly influences the species composition on that soil. Species that can tolerate wetness, such as sweetgum and yellow-poplar, thrive on moderately moist, well drained, loamy soils that are on the lower to middle slopes and in areas adjoining streams. Species such as oak, hickory, and pine grow well on middle slopes and ridges.

Good forest management maintains or improves soil productivity and water quality. Unless properly applied, such forest management activities as site preparation and harvesting can adversely affect soil productivity and water quality and can cause erosion, depletion of nutrients, and surface compaction. Site-specific forest management plans that include consideration of topography, time of year, natural fertility, and the hazard of erosion can prevent damage to soil and water resources.

This soil survey can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilizer than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 8 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

Table 8 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface

layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The *potential productivity* of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *productivity class* represents an expected volume produced by the most important trees, expressed in cubic meters per hectare per year calculated at the age of culmination of mean annual increment.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Woodland Understory Vegetation

David W. Sanders, resource conservationist, Natural Resources Conservation Service, helped prepare this section.

Understory vegetation consists of grasses, forbs, shrubs, and other plants. If well managed, some woodland can produce enough understory vegetation to support grazing of livestock or wildlife, or both, without damage to the trees.

The quantity and quality of understory vegetation vary with the kind of soil, the age and kind of trees in the canopy, the density of the canopy, and the depth and condition of the litter. The density of the canopy determines the amount of light that understory plants receive.

Significant changes in kind and abundance of understory plants occur as the canopy changes, often

regardless of grazing use. Forage value ratings are based on the percentage of the existing understory plant community made up of preferred and desirable plant species as they relate to livestock palatability.

Table 9 shows, for each soil suitable for woodland, the potential for producing understory vegetation. The total production of understory vegetation includes the herbaceous plants and the leaves, twigs, and fruit of woody plants to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in a normal year.

Table 9 also lists the common names of the characteristic vegetation on each soil and the *composition*, by percentage of air-dry weight, of each kind of plant. The table shows the kind and percentage of understory plants expected under a canopy density that is most nearly typical of woodland in which the production of wood crops is highest.

Recreation

The soils of the survey area are rated in table 10 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 10, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 10 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 13 and interpretations for dwellings without basements and for local roads and streets in table 12.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Harvey G. Huffstatler, wildlife biologist, Natural Resources Conservation Service, helped prepare this section.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Simpson County provides habitat for a wide variety of

game and nongame wildlife species. Some species, such as white-tailed deer, turkey, squirrel, cottontail rabbit, beaver, and coyote, have large or expanding populations. Other species, such as black bear, red wolf, and cougar, are extremely rare or are generally not found in Simpson County. Changes in habitat affect wildlife species and population levels. Human activity is the most important factor that affects wildlife. Soil is the second most important factor.

In table 11, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, soybeans, and millet.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flooding, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, lespedeza, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are ragweed, goldenrod, beggarweed, Johnsongrass, and partridge pea.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, hawthorn, dogwood, hickory, blackberry, and wild blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive, crabapple, and sawtooth oak.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, pondweed, rushes, and sedges.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface texture, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, mourning dove, meadowlark, field sparrow, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, kingfisher, thrushes, woodpeckers,

squirrels, gray fox, raccoon, and white-tailed deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, raccoon, muskrat, mink, otter, beaver, and cottonmouth moccasin.

Engineering

Ross L. Ulmer, agricultural engineer, Natural Resources Conservation Service, helped prepare this section.

This section provides information for planning land uses related to rural and urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the "Glossary."

Building Site Development

Table 12 shows the degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to a very firm dense layer, stone content, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture, permeability, and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are

made for small commercial buildings without basements and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 13 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 13 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, and flooding affect absorption of the effluent.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel are less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while anaerobic and aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage at a minimum depth of 8 feet for anaerobic treatment or within a depth of 2 to 5 feet for aerobic treatment. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 13 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, flooding, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope can cause construction problems.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the

site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 13 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, slope, and flooding affect both types of landfill. Texture and soil reaction affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 14 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by a high water table and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential and slopes of 15 to 25 percent. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. These soils may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 14, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Acidity and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also

evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by gravel, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope and a water table.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They have little or no gravel and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant nutrients as it decomposes.

Water Management

Table 15 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of gravel. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to layers that affect the rate of water movement, permeability, depth to a high water table or depth of standing water if the soil is subject to ponding, slope, susceptibility to flooding, and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by slope and by the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The performance of a system is affected by the depth of the root zone and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope and wetness affect the

construction of terraces and diversions. A restricted rooting depth, a severe hazard of soil blowing or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness and slope affect the construction of grassed waterways. Low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 20.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 16 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard

Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 17 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence the shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates

are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 17, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 18 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 18 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 18 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 18.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the

water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Physical and Chemical Analyses of Selected Soils

D.E. Pettry, professor of soil science, Mississippi State University, prepared this section.

The results of physical and chemical analyses of several typical pedons in the survey area are given in table 19. The data are for soils sampled at carefully selected sites. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." Soil samples were analyzed by the Soil Genesis and Morphology Laboratory, Mississippi Agricultural and Forestry Experiment Station.

The physical properties of soils, such as infiltration rate and conduction, shrink-swell potential, crusting, consistence, and available water capacity, are closely related to soil texture.

The deep, nearly level, loamy soils on the flood plains, such as Kirkville soils, have a relatively high content of sand and moderate permeability. Soils that have a high content of silt in the surface layer, such as Providence soils, tend to pack when cultivated and form a crust, which may hinder plant emergence.

The chemical properties of soils, in combination with such soil features as permeability, structure, and texture, influence the limitations of individual soils. Laboratory analyses are necessary to determine the chemical properties of a soil. The amount and type of clay minerals and the organic matter content regulate to a large extent the chemical nature of soils. These substances have the capacity to attract and hold cations. Exchangeable cations are positively charged elements that are bonded to negatively charged clay minerals and organic matter.

The exchangeable cations may be removed or exchanged through leaching or plant uptake. Through the process of cation exchange, soil acidity is corrected by applications of lime. One milliequivalent per 100 grams of extractable acidity requires 1,000 pounds of calcium carbonate (lime) per acre to neutralize it.

Soil chemical data are expressed as milliequivalents per 100 grams of dry soil. Milliequivalents per 100 grams can be converted to pounds per acre. An acre of the plow layer, or topsoil, of average soils to a depth of 6.67 inches weighs about 2 million pounds. The conversions for the cations listed in table 19 are as follows: pounds per acre of calcium equals meq/100 grams multiplied by 400; pounds per acre of magnesium equals meq/100 grams multiplied by 240; pounds per acre of potassium equals meq/100 grams multiplied by 780; pounds per acre of sodium equals meq/100 grams multiplied by 460; and pounds per acre of hydrogen equals meq/100 grams multiplied by 20.

Most of the soils in Simpson County are acid and have a low capacity to retain plant nutrients because of weathering and a high rate of leaching and because of the influence of siliceous parent materials. Base saturation is related to weathering and reflects the replacement of bases by acidity. Columbus and Kirkville soils have low base saturation, which is indicative of intensive weathering and siliceous parent materials.

Some categories of the classification system used by the National Cooperative Soil Survey use chemical soil properties as differentiating criteria *(10).* Alfisols and Ultisols, for example, are separated on the basis of percentage base saturation deep in the subsoil. Ultisols have base saturation of less than 35 percent in the lower part of the soil. Alfisols have base saturation of more than 35 percent. For example, Freest and Providence soils, which are Alfisols, have base saturation of more than 35 percent at a depth of more than 3 feet.

Determinations in table 19 were made on soil material smaller than 2 millimeters in diameter. The samples were prepared for analysis by air-drying, crushing, and screening through a standard 10-mesh sieve. Measurements reported as percent or quantity of

unit weight were calculated on an ovendry basis. The particle-size analysis shown in table 19 was obtained using Day's hydrometer method *(6)*. The methods used in obtaining the other data are indicated in the list that follows. The codes in parentheses refer to published methods *(11)*.

Extractable cations—ammonium acetate pH 7.0, uncorrected; calcium (6N2), magnesium (6O2), sodium (6P2), potassium (6Q2).

Extractable acidity—barium chloride-triethanolamine 1 (6H1a).

Cation-exchange capacity—sum of cations (5A3a).

Base saturation—sum of cations, TEA, pH 8.2 (5C3).

Reaction (pH)—1:1 water dilution (8C1a).

Organic carbon—dichromate, ferric sulfate titration (6A1a).

Engineering Index Test Data

Table 20 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by the Mississippi State Highway Department.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 422 (ASTM), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 4318 (ASTM); Plasticity index—T 90 (AASHTO), D 4318 (ASTM); and Moisture density—T 99 (AASHTO), D 698 (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(10)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 21 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Ultisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udult (*Ud*, meaning humid, plus *ult*, from Ultisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fragiudults (*Fragi*, meaning brittle, plus *udult*, the suborder of the Ultisols that have a fragipan).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fragiudults.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, siliceous, thermic Typic Fragiudults.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the underlying material can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(13)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(10)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Bruno Series

The Bruno series consists of excessively drained soils that formed in stratified sandy alluvium. These soils are on natural levees and near channels on flood

plains. Slopes range from 0 to 5 percent. The soils are sandy, mixed, thermic Typic Udifluvents.

Bruno soils are associated on the landscape with Cascilla and Jena soils. Cascilla soils are well drained and are on the broader parts of the flood plain, farther from the stream channels than the Bruno soils. They are fine-silty. Jena soils are well drained and are along the broader parts of the flood plain. They are coarse-loamy.

Typical pedon of Bruno loamy sand, frequently flooded, 0.5 mile south of D'Lo on old Highway 49, in a wooded area, 200 feet west of the highway and 50 feet north of Strong River, on a natural levee; NW¼NW¼ sec. 33, T. 2 N., R. 4 E.

A—0 to 4 inches; dark brown (10YR 4/3) loamy sand; weak fine granular structure; very friable; many fine and common coarse roots; strongly acid; clear wavy boundary.

C1—4 to 14 inches; brown (10YR 5/3) loamy sand; single grain; loose; common fine roots; few bedding planes; strongly acid; gradual wavy boundary.

C2—14 to 30 inches; yellowish brown (10YR 5/4) loamy sand; thin strata of sand, loamy fine sand, and sandy loam less than 0.5 inch thick; single grain; loose; common fine roots; slightly acid; gradual wavy boundary.

C3—30 to 60 inches; light brownish gray (10YR 6/2) loamy sand; thin strata of sand less than 0.5 inch thick; single grain; loose; few fine roots; strongly acid.

Reaction ranges from strongly acid to neutral throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. In some pedons it is less than 6 inches thick and has value of 3.

The C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 4. It is dominantly loamy sand or sand but contains thin strata of loamy very fine sand or finer textures. In some pedons it has mottles in shades of brown or gray in the lower part.

Bude Series

The Bude series consists of somewhat poorly drained soils that formed in a silty deposit less than 4 feet thick and in the underlying loamy sediments. These soils are on uplands and terraces above the flood plains. They have a fragipan. Slopes range from 0 to 2 percent. The soils are fine-silty, mixed, thermic Glossaquic Fragiudalfs.

Bude soils are associated on the landscape with Columbus, Kolin, and Rosebloom soils. Columbus soils are moderately well drained. They are fine-loamy and do not have a fragipan. They are in the slightly higher positions. Kolin soils are moderately well drained and are in the slightly higher positions. Rosebloom soils are poorly drained and are in the lower positions on flats bordering drainageways. They do not have a fragipan.

Typical pedon of Bude silt loam, 0 to 2 percent slopes, 2 miles west of Union on State Highway 28, about 300 feet south of the highway and 200 feet east of a gravel road, in a pasture; NE¼SW¼ sec. 32, T. 1 N., R. 2 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

Bw—5 to 16 inches; yellowish brown (10YR 5/6) silt loam; common medium prominent light brownish gray (10YR 6/2) mottles in the lower 4 inches; weak medium subangular blocky structure; friable; common fine and medium roots; strongly acid; clear wavy boundary.

E/B—16 to 20 inches; mottled light brownish gray (10YR 6/2) silt loam (E), mottled yellowish brown (10YR 5/4) and pale brown (10YR 6/3) silt loam (Btx); weak medium subangular blocky structure; friable; brittle and compact in the yellowish brown Btx portion; few fine roots; many fine vesicular pores; gray silt coatings on faces of peds; strongly acid; clear irregular boundary.

Btx1—20 to 30 inches; mottled yellowish brown (10YR 5/4), pale brown (10YR 6/3), and light brownish gray (10YR 6/2) silty clay loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle in more than 60 percent of the volume; many fine vesicular pores; few faint clay films on faces of peds; prism faces coated with gray silt; strongly acid; clear wavy boundary.

2Btx2—30 to 48 inches; mottled light yellowish brown (10YR 6/4), strong brown (7.5YR 5/6), and light brownish gray (10YR 6/2) silt loam containing noticeable sand; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle in more than 50 percent of the volume; many fine vesicular pores; few faint clay films on faces of prisms; gray silt coatings on vertical faces of prisms; strongly acid; gradual wavy boundary.

2Btx3—48 to 62 inches; mottled brownish yellow (10YR 6/6), yellowish brown (10YR 5/6), and gray (10YR 6/1) silt loam containing noticeable sand; weak very coarse prismatic structure parting to moderate coarse subangular blocky; firm; compact and brittle

in more than 55 percent of the volume; many fine vesicular pores; few faint clay films on faces of prisms; gray silt coatings on vertical faces of prisms; strongly acid.

Depth to the fragipan ranges from 18 to 24 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4, and chroma of 2 to 4 or value of 5 and chroma of 4 to 6.

The Bw horizon has hue of 10YR, value of 4 to 6, and chroma of 4 to 8 or hue of 7.5YR, value of 5, and chroma of 6. In some pedons it is mottled in shades of yellow, brown, and gray. It is silt loam or silty clay loam.

The E/B horizon is mottled in shades of gray and brown. Some pedons have a grayish E horizon.

The Btx and 2Btx horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. They have mottles in shades of brown and yellow or are mottled in shades of yellow, brown, and gray. They are silt loam or silty clay loam. Within a depth of 48 inches, the content of sand is more than 15 percent.

Cahaba Series

The Cahaba series consists of well drained soils that formed in loamy and sandy alluvial deposits. These soils are on terraces. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Typic Hapludults.

Cahaba soils are associated on the landscape with Jena and Savannah soils. Jena soils are well drained and are on natural levees on the flood plains. They are coarse-loamy. Savannah soils are moderately well drained and are on terraces and in the uplands. They have a fragipan.

Typical pedon of Cahaba fine sandy loam, 0 to 2 percent slopes, in a corn field, 1.25 miles south of Union on a county road, 0.75 mile southeast on a private road, 30 feet south of the road and 260 feet north of a wooded area; SW¼NE¼ sec. 1, T. 10 N., R. 21 W.

Ap—0 to 5 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; medium acid; abrupt smooth boundary.

Bt1—5 to 13 inches; yellowish red (5YR 4/6) loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Bt2—13 to 42 inches; yellowish red (5YR 4/6) loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

BC—42 to 48 inches; strong brown (7.5YR 4/6) sandy loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

C1—48 to 56 inches; light yellowish brown (10YR 6/4) loamy sand; few fine faint yellowish brown (10YR 5/4) mottles; single grain; loose; few fine roots; very strongly acid; gradual smooth boundary.

C2—56 to 70 inches; very pale brown (10YR 7/3) sand; few fine distinct strong brown (7.5YR 4/6) and yellowish brown (10YR 5/6) mottles; single grain; loose; very strongly acid.

The thickness of the solum ranges from 36 to 60 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam, loam, or clay loam. The content of clay ranges from 18 to 35 percent but averages about 25 percent in the control section. The content of silt ranges from 20 to 50 percent. The BC horizon or the CB horizon, if it occurs, is strong brown, yellowish red, or red. The texture is sandy loam or fine sandy loam. In some pedons this horizon is mottled in shades of yellow and brown.

The C horizon ranges from yellowish brown to red. It is commonly interbedded or stratified with textures of sand, loamy sand, sandy loam, and fine sandy loam. In some pedons it has mottles in shades of yellow, brown, and gray.

Cascilla Series

The Cascilla series consists of well drained soils that formed in silty alluvium. These soils are on flood plains and natural levees of major streams. Slopes range from 0 to 2 percent. The soils are fine-silty, mixed, thermic Fluventic Dystrochrepts.

Cascilla soils are associated on the landscape with Bruno and Jena soils. Bruno soils are excessively drained and are on natural levees. They are in a sandy family. Jena soils are coarse-loamy. They are on the broader parts of the flood plain adjacent to the Bruno soils.

Typical pedon of Cascilla silt loam, occasionally flooded, in a soybean field, 3.0 miles south of Union on a county road to a crossroad, 3.25 miles west on the road, 20 feet south of the road and 250 feet south of an

oxbow lake; NE¼NE¼ sec. 18, T. 10 N., R. 21 W.

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; many fine roots; strongly acid; clear smooth boundary.

Bw1—6 to 9 inches; dark brown (10YR 4/3) silt loam; common medium faint brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; many fine roots; strongly acid; clear smooth boundary.

Bw2—9 to 29 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure parting to weak coarse granular; friable; common pale brown (10YR 6/3) silt coatings on faces of some peds; common fine roots; very strongly acid; clear smooth boundary.

Bw3—29 to 46 inches; yellowish brown (10YR 5/4) silt loam; common fine distinct dark brown (10YR 3/3) mottles; weak medium subangular blocky structure; friable; common pale brown (10YR 6/3) silt coatings on faces of some peds; common fine roots; very strongly acid; gradual smooth boundary.

Bw4—46 to 56 inches; brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; gradual smooth boundary.

Bw5—56 to 62 inches; dark brown (10YR 4/3) silt loam; common fine distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; very strongly acid.

The thickness of the solum ranges from 45 to 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 to 4.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. In some pedons it has few or common mottles in shades of gray below a depth of 24 inches. It is silt loam or silty clay loam. The content of clay ranges from 18 to 30 percent.

The BC horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 4 to 6. In some pedons it has mottles in shades of gray.

The 2C horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 6, or it is mottled in shades of brown and gray. It is fine sandy loam, loam, or silt loam.

Columbus Series

The Columbus series consists of moderately well drained soils that formed in thick beds of loamy and sandy deposits. These soils are on terraces along the major streams. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Aquic Hapludults.

Columbus soils are associated on the landscape with Bude and Rosebloom soils. Bude and Rosebloom soils are fine-silty. Bude soils are somewhat poorly drained and are in landscape positions similar to those of the Columbus soils. They have a fragipan. Rosebloom soils are poorly drained and are in the lower positions on the flood plains.

Typical pedon of Columbus silt loam, 0 to 2 percent slopes, approximately 0.75 mile west of Old Pearl on a county road, 600 feet south of the road and 150 feet east of the tree line, in a pasture; NE¼SE¼ sec. 20, T. 2 N., R. 1 E.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

Bt1—6 to 18 inches; yellowish brown (10YR 5/4) clay loam; moderate fine and medium subangular blocky structure; firm; slightly plastic, sticky; few fine and medium roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—18 to 24 inches; yellowish brown (10YR 5/6) clay loam; common medium faint strong brown (7.5YR 5/6) and common medium prominent light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; slightly plastic, sticky; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—24 to 36 inches; brown (10YR 5/3) clay loam; few fine distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; slightly plastic, sticky; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

BC—36 to 48 inches; light brownish gray (10YR 6/2) sandy clay loam; few fine distinct yellowish brown (10YR 5/4) and few fine prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; very strongly acid; abrupt smooth boundary.

C—48 to 60 inches; yellowish brown (10YR 5/4) sandy loam; common medium distinct pale brown (10YR 6/3) and light brownish gray (10YR 6/2) mottles; massive; very friable; very strongly acid.

The thickness of the solum ranges from 35 to 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt1 horizon has hue of 10YR or 7.5YR, value of

4 or 5, and chroma of 4 to 8. It is clay loam, loam, or sandy clay loam.

The Bt2 and Bt3 horizons have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 8 and have mottles in shades of brown, gray, or red, or they are mottled in shades of brown and gray. Mottles with chroma of 2 or less are in the upper 24 inches of the Bt horizon. The Bt2 and Bt3 horizons are clay loam, loam, or sandy clay loam. The content of clay in the upper 20 inches of the Bt horizon ranges from 18 to 33 percent, and the content of silt is more than 25 percent.

The BC horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 and has mottles in shades of brown and red, or it is mottled in shades of gray, brown, and red. It is sandy clay loam or loam.

The C horizon is mottled in shades of brown or gray and has no dominant matrix color, or it has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8 and has mottles in shades of brown and gray. It is sandy loam or loamy sand.

Freest Series

The Freest series consists of moderately well drained soils that formed in loamy and clayey deposits. These soils are on uplands. Slopes range from 2 to 8 percent. The soils are fine-loamy, siliceous, thermic Aquic Paleudalfs.

Freest soils are associated on the landscape with Lorman, Petal, and Savannah soils. Lorman soils are moderately well drained and are in the slightly higher areas. They are in a fine textured family. Petal soils are moderately well drained and are in the steeper areas. They are fine-loamy. Savannah soils are moderately well drained and are in the slightly higher areas or in landscape positions similar to those of the Freest soils. They are fine-loamy and have a fragipan.

Typical pedon of Freest loam, 2 to 5 percent slopes, eroded, in a pasture, 6.0 miles northwest of Harrisville on State Highway 469, 0.5 mile east on a county road and 75 feet south of the road; SW¼SE¼ sec. 5, T. 2 N., R. 2 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; very friable; many fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—6 to 21 inches; yellowish brown (10YR 5/6) loam; common medium faint strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; few small quartz pebbles; very strongly acid; clear wavy boundary.

Bt2—21 to 30 inches; yellowish brown (10YR 5/6) sandy clay; common medium distinct grayish brown (10YR 5/2) and strong brown (7.5YR 5/6) and few fine prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; few small quartz pebbles; strongly acid; clear wavy boundary.

Bt3—30 to 38 inches; mottled yellowish brown (10YR 5/6), yellowish red (5YR 5/6), and light brownish gray (10YR 6/2) clay loam; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; few small quartz pebbles; strongly acid; gradual wavy boundary.

Bt4—38 to 46 inches; mottled light brownish gray (10YR 6/2), yellowish red (5YR 5/6), and yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; very firm; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt5—46 to 60 inches; mottled light gray (10YR 6/1), red (2.5YR 4/8), and yellowish brown (10YR 5/6) clay loam; strong medium angular blocky structure; very firm; plastic and sticky; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid in the surface layer, except in areas that have been limed. It ranges from very strongly acid to medium acid in the upper part of the subsoil and from strongly acid to neutral in the lower part.

The A or Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4.

The upper part of the Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 6. In some pedons it is mottled in shades of gray, brown, and yellow. It is loam or sandy clay loam.

The lower part of the Bt horizon commonly is mottled in shades of brown, gray, and red and has no dominant matrix color. In some pedons it has hue of 10YR, value of 6, and chroma of 1 or 2 and has few to many mottles. It is clay loam, silty clay, or clay.

Jena Series

The Jena series consists of well drained soils that formed in loamy alluvium on flood plains. These soils are on natural levees along the larger streams and on flood plains along the smaller streams. Slopes range from 0 to 2 percent. The soils are coarse-loamy, siliceous, thermic Fluventic Dystrochrepts.

Jena soils are associated on the landscape with Bruno, Cahaba, Cascilla, Prentiss, Quitman, and Trebloc soils. The sandy Bruno soils are excessively drained and are near the stream channels. Cahaba

soils are well drained and are on terraces. They are fine-loamy. Cascilla soils are well drained and are on natural levees. They are fine-silty. Prentiss soils are moderately well drained and are on terraces. They are coarse-loamy and have a fragipan. Quitman soils are somewhat poorly drained and are on uplands and terraces. They are fine-loamy. Trebloc soils are poorly drained and are on terraces and in the lower positions on the flood plains. They are fine-silty.

Typical pedon of Jena fine sandy loam, occasionally flooded, 1.75 miles north of Pinola on a county road, 400 feet west of the road, in a field; NE¼NW¼ sec. 26, T. 1 N., R. 3 E.

Ap1—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; many fine and medium roots; slightly acid; clear smooth boundary.

Ap2—3 to 8 inches; dark brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; many fine and medium roots; slightly acid; clear smooth boundary.

Bw1—8 to 19 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; many fine roots; strongly acid; clear smooth boundary.

Bw2—19 to 34 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; common fine roots; few uncoated sand grains; strongly acid; clear wavy boundary.

C1—34 to 42 inches; yellowish brown (10YR 5/4) fine sandy loam; massive; friable; few fine roots; very strongly acid; gradual smooth boundary.

C2—42 to 51 inches; yellowish brown (10YR 5/4) fine sandy loam; few medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; very strongly acid; gradual wavy boundary.

C3—51 to 62 inches; light yellowish brown (10YR 6/4) fine sandy loam; many fine faint pale brown (10YR 6/3) and few fine distinct yellowish brown (10YR 5/6) mottles; massive; very friable; very strongly acid.

The thickness of the solum ranges from 30 to 50 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The Bw horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 6. It is fine sandy loam, sandy loam, silt loam, or loam. The content of clay in the particle-size control section, or the 10- to 40-inch section, ranges from 10 to 18 percent.

The C horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. It is sandy loam, fine sandy loam, or loamy fine sand. In some pedons it is stratified.

Kirkville Series

The Kirkville series consists of moderately well drained soils that formed in loamy alluvium. These soils are mainly on narrow flood plains. Slopes range from 0 to 2 percent. The soils are coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts.

Kirkville soils are associated on the landscape with Mantachie, Quitman, and Stough soils. Mantachie soils are somewhat poorly drained and are in the lower positions on the flood plains. They are fine-loamy. Quitman soils are somewhat poorly drained and are on terraces. They are fine-loamy. Stough soils are somewhat poorly drained and are in the higher positions on uplands and terraces. They are coarse-loamy and have horizons in the control section that contain 40 to 60 percent brittle material.

Typical pedon of Kirkville fine sandy loam, occasionally flooded, in a wooded area, 0.6 mile west of D'Lo on a county road, about 150 feet north of the road, in a field; SE¼NW¼ sec. 29, T. 2 N., R. 4 E.

Ap—0 to 5 inches; brown (10YR 5/3) fine sandy loam; many fine faint dark brown (10YR 4/3) mottles; weak fine granular structure; friable; many fine and medium roots; few fine strong brown stains in root channels; strongly acid; clear smooth boundary.

Bw1—5 to 15 inches; yellowish brown (10YR 5/4) fine sandy loam; common fine faint light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; common fine black and strong brown stains in root channels; strongly acid; gradual smooth boundary.

Bw2—15 to 24 inches; yellowish brown (10YR 5/4) sandy loam; common medium distinct brown (10YR 4/3) and light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; friable; common fine roots; common black stains; very strongly acid; gradual smooth boundary.

Bw3—24 to 33 inches; brown (10YR 5/3) silt loam; common medium distinct light brownish gray (2.5Y 6/2) and dark yellowish brown (10YR 4/6) mottles; weak medium subangular blocky structure; friable; few fine roots; common black stains; very strongly acid; gradual smooth boundary.

Bg1—33 to 49 inches; light brownish gray (2.5Y 6/2) silt loam; common medium prominent yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine and medium black and strong brown concretions

and stains; very strongly acid; gradual wavy boundary.

Bg2—49 to 62 inches; light brownish gray (10YR 6/2) silt loam; common medium prominent yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine black concretions and stains; very strongly acid.

The thickness of the solum ranges from 30 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bw horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It commonly has brownish and grayish mottles. Mottles with chroma of 2 or less are within a depth of 24 inches. They are commonly at a depth of 12 to 16 inches and increase in abundance with increasing depth. The Bw horizon is fine sandy loam, sandy loam, loam, and silt loam. The content of clay in the particle-size control section, or the 10- to 40-inch section, ranges from 10 to 18 percent.

The Bg horizon has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 or 6 and chroma of 0 to 2. It has few to many mottles in shades of brown and yellow. It has the same range in texture as the Bw horizon. It has few to many brown, red, or black concretions.

The C horizon, if it occurs, has hue of 10YR or 2.5Y or is neutral in hue. It has value of 5 or 6 and chroma of 0 to 2. It has few to many mottles in shades of gray or brown. It is fine sandy loam, sandy loam, or loam.

Kolin Series

The Kolin series consists of moderately well drained soils that formed in a silty deposit about 2.5 feet thick and in the underlying clayey sediments. These soils are on terraces. Slopes range from 1 to 3 percent. The soils are fine-silty, siliceous, thermic Glossaquic Paleudalfs.

Kolin soils are associated on the landscape with Bude and Rosebloom soils. Bude soils are somewhat poorly drained and are in landscape positions similar to those of the Kolin soils. They are fine-silty and have a fragipan. Rosebloom soils are poorly drained and are on flood plains. They are fine-silty.

Typical pedon of Kolin silt loam, 1 to 3 percent slopes, 3.5 miles south of Union on a county road, 1.5 miles west on a local road, and 300 feet north of the road, in a field; SE¼NW¼ sec. 21, T. 10 N., R. 21 W.

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

E—6 to 8 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; many fine and common medium roots; strongly acid; clear wavy boundary.

Bt—8 to 18 inches; yellowish brown (10YR 5/8) silt loam; moderate medium subangular blocky structure; firm; common fine and few medium roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

B/E—18 to 28 inches; mixed yellowish brown (10YR 5/6) silty clay loam (Bt) and grayish brown (10YR 5/2) silt loam (E); moderate medium subangular blocky structure; firm; few fine roots; strongly acid; clear wavy boundary.

2Bt1—28 to 43 inches; yellowish brown (10YR 5/4) silty clay; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium angular blocky structure; firm; plastic and sticky; strong brown (7.5YR 5/6) stains along old root channels; few faint clay films on faces of peds; slightly acid; clear smooth boundary.

2Bt2—43 to 64 inches; yellowish brown (10YR 5/6) silty clay; common medium prominent grayish brown (10YR 5/2) mottles; moderate medium angular blocky structure; firm; plastic and sticky; yellowish red (5YR 4/6) stains along pores; few faint clay films on faces of peds; slightly acid.

Depth to the 2Bt horizon ranges from 20 to 40 inches. Reaction ranges from very strongly acid to medium acid in the surface layer and in the E horizon, except in areas where the surface layer has been limed. It ranges from very strongly acid to medium acid in the upper part of the subsoil and from very strongly acid to slightly acid in the lower part.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 1 to 3.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. It is silt loam or silty clay loam.

The 2Bt horizon has hue of 10YR to 5YR, value of 4 or 5, and chroma of 6 to 8. It has mottles in shades of gray, red, yellow, or brown. It is silty clay or clay.

Lorman Series

The Lorman series consists of moderately well drained soils that formed in interbedded, dominantly clayey and silty sediments. These soils are on dissected uplands. Slopes range from 2 to 35 percent.

The soils are fine, montmorillonitic, thermic Vertic Hapludalfs.

Lorman soils are associated on the landscape with Freest and Providence soils. Freest soils are moderately well drained and are in the less sloping areas on uplands. They are fine-loamy. Providence soils are moderately well drained and are on terraces and in the uplands. They are fine-silty and have a fragipan.

Typical pedon of Lorman silt loam, 2 to 5 percent slopes, eroded, about 4 miles west of Shivers on a county road, about 30 feet east of the road, in woodland; NE¼SW¼ sec. 30, T. 10 N., R. 20 W.

Ap—0 to 5 inches; brown (10YR 5/3) silt loam; common medium faint dark brown (10YR 4/3) and few coarse prominent red (2.5YR 5/8) mottles; weak fine granular structure; friable; common fine and medium roots; slightly acid; abrupt smooth boundary.

Bt1—5 to 13 inches; red (2.5YR 4/8) clay; moderate fine and medium subangular blocky structure; firm; sticky and plastic; few very fine and fine roots concentrated along vertical faces of peds; yellowish red (5YR 5/6) stains along root channels; few faint clay films and stress surfaces on faces of peds; few faint silt coatings on faces of peds; medium acid; gradual wavy boundary.

Bt2—13 to 22 inches; red (2.5YR 4/8) clay; common medium prominent light brownish gray (10YR 6/2) mottles; moderate fine and medium subangular blocky structure; firm; sticky, very plastic; few fine roots; few faint clay films and stress surfaces on faces of peds; medium acid; clear wavy boundary.

Btss—22 to 36 inches; light brownish gray (10YR 6/2) clay; few medium prominent yellowish red (5YR 4/6) and few fine prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; sticky, very plastic; few faint clay films and stress surfaces on faces of peds; few slickensides; few very fine roots; medium acid; gradual smooth boundary.

BC—36 to 56 inches; light brownish gray (2.5Y 6/2) clay; few medium prominent yellowish brown (10YR 5/6) mottles; massive in place parting to moderate medium angular blocky structure; firm; sticky, very plastic; few faint clay films on faces of some peds; few slickensides that do not intersect; strongly acid; abrupt smooth boundary.

C—56 to 62 inches; light brownish gray (2.5Y 6/2) silty clay loam; massive; firm; common medium and coarse weakly indurated siltstone fragments; strongly acid.

The thickness of the solum ranges from 40 to 60 inches. Reaction ranges from very strongly acid to slightly acid in the A horizon and in the E horizon, if it occurs. It ranges from strongly acid to mildly alkaline in the Bt, BC, and C horizons.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 6.

The E horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 2 to 4.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 3 to 8. In some pedons it has few or common mottles in shades of red, brown, or gray. The lower part of the Bt horizon and the Btss horizon have hue of 5YR, 2.5YR, 7.5YR, or 10YR, value of 4 to 6, and chroma of 2 to 8. In some pedons the lower part of the Bt horizon and the Btss horizon have few or common mottles in shades of red, brown, and gray. The Bt and Btss horizons are clay, silty clay, or silty clay loam. The content of clay in the particle-size control section, or the upper 20 inches of the Bt horizon, ranges from 35 to 55 percent.

The BC horizon, if it occurs, commonly has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. In some pedons it has few to many mottles in shades of brown or red. It is clay, silty clay, or silty clay loam. In some pedons it has few to many fine to coarse fragments of siltstone.

The C horizon has the same range in colors as that of the BC horizon. It consists of interbedded, discontinuous layers of silty and clayey deposits and has few to many medium to coarse fragments of siltstone. The texture is variable. In some pedons the C horizon has few or common nodules of calcium carbonate. In some pedons it has strata of soft, thinly bedded siltstone.

Mantachie Series

The Mantachie series consists of somewhat poorly drained soils that formed in loamy alluvium. These soils are on flood plains. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, acid, thermic Aeric Fluvaquents.

Mantachie soils are associated on the landscape with Kirkville, Quitman, Stough, and Trebloc soils. Kirkville soils are moderately well drained and are in positions on the flood plains similar to those of the Mantachie soils. They are coarse-loamy. Quitman soils are somewhat poorly drained and are on terraces. They are fine-loamy. Stough soils are somewhat poorly drained and are on nearby uplands and terraces. They are coarse-loamy. Trebloc soils are poorly drained and are on low stream terraces. They are fine-silty.

Typical pedon of Mantachie loam, occasionally flooded, 1 mile southeast of Martinville on a county

road, 100 feet east of the road, in a field; SE¼SE¼ sec. 36, T. 2 N., R. 5 E.

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; many fine roots; very strongly acid; abrupt smooth boundary.

Bw1—6 to 12 inches; brown (10YR 5/3) loam; common medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common fine roots; very strongly acid; clear smooth boundary.

Bw2—12 to 19 inches; brown (10YR 5/3) loam; common medium distinct dark yellowish brown (10YR 4/4) and light brownish gray (10YR 6/2) mottles; moderate fine and medium subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

Bg1—19 to 40 inches; light brownish gray (10YR 6/2) loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

Bg2—40 to 54 inches; light gray (10YR 6/1) clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; firm; common medium rounded brown and black manganese concretions; very strongly acid; clear smooth boundary.

Bg3—54 to 62 inches; gray (10YR 5/1) clay loam; many coarse faint light gray (10YR 6/1) and many coarse distinct dark yellowish brown (10YR 4/4) mottles; weak fine and medium subangular blocky structure; firm; few medium rounded brown manganese concretions; very strongly acid.

The thickness of the solum ranges from 30 to 65 inches. Reaction is very strongly acid or strongly acid in the A and B horizons, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 6, or it is mottled in shades of brown and gray.

The Bw horizon is mottled in shades of gray, brown, and yellow and has no dominant matrix color, or it has hue of 10YR, value of 4 or 5, and chroma of 2 to 6 and has few to many mottles in shades of gray or brown. The Bg horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2, or it has hue of 2.5Y, value of 4 to 6, and chroma of 2. It has few to many mottles in shades of gray, brown, or red. The B horizon is clay loam, loam, or sandy clay loam. The content of clay in the particle-size control section, or the 10- to 40-inch section, ranges from 18 to 34 percent.

The C horizon, if it occurs, has hue of 10YR, value of 4 to 7, and chroma of 1 or 2, or it has hue of 2.5Y, value of 4 to 6, and chroma of 2. It is clay loam, loam, or sandy clay loam.

Ora Series

The Ora series consists of moderately well drained soils that formed in loamy deposits. These soils are on uplands. They have a fragipan. Slopes range from 2 to 8 percent. The soils are fine-loamy, siliceous, thermic Typic Fragiudults.

Ora soils are associated on the landscape with Ruston, Savannah, and Smithdale soils. Ruston soils are well drained and are on uplands in positions similar to those of the Ora soils. They are fine-loamy and do not have a fragipan. Savannah soils are moderately well drained and are on high terraces. They are fine-loamy and have a fragipan. Smithdale soils are well drained and are in the steeper areas. They are fine-loamy and do not have a fragipan.

Typical pedon of Ora loam, 2 to 5 percent slopes, eroded, 11.0 miles south of Mendenhall on State Highway 13, 1.25 miles west on State Highway 28, 1.1 miles north on a county road and 100 feet west of the road; SE¼SW¼ sec. 10, T. 10 N., R. 19 W.

Ap—0 to 6 inches; dark yellowish brown (10YR 4/4) loam; weak fine granular structure; friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

Bt1—6 to 15 inches; red (2.5YR 4/6) loam; weak medium subangular blocky structure; friable; many fine and medium roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—15 to 24 inches; yellowish red (5YR 5/6) loam; common medium faint strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btx1—24 to 31 inches; mottled yellowish brown (10YR 5/4), yellowish red (5YR 4/6), and light brownish gray (10YR 6/2) sandy loam; strong very coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle in about 70 percent of the mass; few faint clay films on faces of prisms and common distinct clay films on secondary peds; strongly acid; gradual smooth boundary.

Btx2—31 to 48 inches; mottled strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), and light brownish gray (10YR 6/2) sandy loam; strong very coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle in about 70 percent of the mass; few faint clay films on faces of prisms and common distinct clay films

on secondary peds; strongly acid; gradual smooth boundary.

Btx3—48 to 55 inches; mottled strong brown (7.5YR 5/6), yellowish red (5YR 5/8), red (2.5YR 4/8), and light brownish gray (10YR 6/2) sandy loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle in 60 percent of the mass; few faint clay films on faces of prisms and common distinct clay films on secondary peds; very strongly acid; clear wavy boundary.

C—55 to 65 inches; mottled strong brown (7.5YR 5/6) and red (2.5YR 4/8) sandy clay loam; massive; friable; strongly acid.

Depth to the fragipan ranges from 18 to 42 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 4, or it has hue of 2.5Y, value of 4 or 5, and chroma of 2.

The E horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. It is silt loam, fine sandy loam, loam, or sandy loam.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8. It is clay loam, sandy clay loam, or loam. In the particle-size control section, between a depth of 10 inches and the upper boundary of the fragipan, the content of clay ranges from 18 to 33 percent and the content of silt ranges from 20 to 50 percent.

The Btx horizon is mottled in shades of yellow, brown, gray, or red and has no dominant matrix color, or it ranges in color from yellowish red to yellowish brown and is mottled in shades of gray, yellow, or red. It is sandy clay loam, loam, or sandy loam. In some pedons it has few to many black and brown concretions. In some pedons it has few fine to coarse gravel-sized fragments of quartz.

The C horizon is mottled in shades of yellow, brown, gray, or red and has no dominant matrix color, or it ranges in color from yellowish red to yellowish brown and has mottles in shades of gray, yellow, or red. It is sandy clay loam, loam, or sandy loam. Some pedons have few fine to coarse quartz pebbles.

Petal Series

The Petal series consists of moderately well drained soils that formed in loamy and clayey deposits. These soils are on dissected uplands. Slopes range from 8 to 20 percent. The soils are fine-loamy, siliceous, thermic Typic Paleudalfs.

Petal soils are associated on the landscape with Freest and Smithdale soils. Freest soils are moderately well drained and are in the less sloping areas. They are fine-loamy. Smithdale soils are well drained and are on uplands in landscape positions similar to those of the Petal soils. They are fine-loamy.

Typical pedon of Petal fine sandy loam, in an area of Petal and Smithdale soils, 8 to 15 percent slopes, about 4.0 miles north of Harrisville on State Highway 469, 2.5 miles northwest on a county road, and about 50 feet east of the road, in a wooded area; SE¼NE¼ sec. 11, T. 2 N., R. 1 E.

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E—4 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear wavy boundary.

Bt1—8 to 18 inches; yellowish red (5YR 5/6) clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—18 to 26 inches; yellowish red (5YR 5/6) sandy clay loam; common medium prominent light brownish gray (10YR 6/2) and red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—26 to 38 inches; pale brown (10YR 6/3) clay loam; common medium distinct strong brown (7.5YR 5/6) and few fine prominent red (2.5YR 4/8) mottles; moderate medium angular blocky structure; firm; few fine roots; few faint clay films on faces of peds; few fine and medium quartz pebbles; very strongly acid; gradual wavy boundary.

2Bt4—38 to 48 inches; light brownish gray (2.5Y 6/2) clay; few fine prominent strong brown (7.5YR 5/6) mottles; moderate medium angular blocky structure; firm; slightly sticky and plastic; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

2Bt5—48 to 60 inches; light brownish gray (2.5Y 6/2) silty clay; common medium prominent brownish yellow (10YR 6/8) mottles; moderate medium angular blocky structure; firm; slightly sticky and plastic; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum ranges from 60 to more

than 80 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The E horizon, if it occurs, has hue of 10YR, value of 4 to 6, and chroma of 3 or 4. It is fine sandy loam, sandy loam, or loam.

The Bt1 horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 to 8, or it has hue of 7.5YR, value of 5, and chroma of 6 to 8. The Bt2 horizon has the same range in color as the Bt1 horizon and has mottles in shades of gray, or it is mottled in shades of red, brown, and gray. The Bt horizon is sandy clay loam, loam, or clay loam. The content of clay in the upper 20 inches of the Bt horizon ranges from 20 to 35 percent.

The 2Bt horizon is mottled in shades of red, gray, and brown, or it has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 to 3 and has few to many mottles in shades of red, gray, and brown. It is clay loam, silty clay, silty clay loam, or clay.

Prentiss Series

The Prentiss series consists of moderately well drained soils that formed in loamy deposits. These soils are on terraces and in the uplands. They have a fragipan. Slopes range from 0 to 2 percent. The soils are coarse-loamy, siliceous, thermic Glossic Fragiudults.

Prentiss soils are associated on the landscape with Jena, Quitman, and Savannah soils. Jena soils are well drained and are on flood plains. They are coarse-loamy and do not have a fragipan. Quitman soils are somewhat poorly drained and are in the slightly lower positions on terraces. They are fine-loamy and do not have a fragipan. Savannah soils are moderately well drained and are on terraces in landscape positions similar to those of the Prentiss soils. They are fine-loamy and have a fragipan.

Typical pedon of Prentiss fine sandy loam, 0 to 2 percent slopes, 5 miles west of Pinola on State Highway 28, 500 feet north of the highway, and 250 feet southeast of a farm pond, in a field; NE¼SW¼ sec. 36, T. 1 N., R. 2 E.

Ap—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

E—4 to 9 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium granular blocky structure; very friable; common fine roots; strongly acid; clear smooth boundary.

Bt1—9 to 16 inches; yellowish brown (10YR 5/6) loam; few fine distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; very strongly acid; gradual smooth boundary.

Bt2—16 to 29 inches; light yellowish brown (10YR 6/4) loam; weak medium subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; very strongly acid; clear wavy boundary.

Btx1—29 to 38 inches; light yellowish brown (10YR 6/4) loam; common fine faint yellowish brown (10YR 5/4) and common fine distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 4/6) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle in about 65 percent of the volume; few fine roots in gray seams between prisms; common fine pores; few faint clay films on faces of prisms and common distinct clay films on secondary peds; common fine and medium black manganese concretions; very strongly acid; gradual wavy boundary.

Btx2—38 to 50 inches; light yellowish brown (10YR 6/4) fine sandy loam; many medium distinct dark yellowish brown (10YR 4/4) and common medium distinct light brownish gray (10YR 6/2) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; firm; brittle and compact in about 65 percent of the volume; common fine vesicular pores; few faint clay films on faces of prisms and common distinct clay films on secondary peds; very strongly acid; gradual smooth boundary.

Btx3—50 to 62 inches; mottled light yellowish brown (10YR 6/4), yellowish brown (10YR 5/6), and light brownish gray (10YR 6/2) fine sandy loam; weak coarse prismatic structure parting to weak medium subangular blocky; firm; brittle and compact in about 65 percent of the volume; common fine vesicular pores; few faint clay films on faces of prisms and common distinct clay films on secondary peds; few black manganese stains; very strongly acid.

The thickness of the solum is more than 60 inches. Depth to the fragipan ranges from 20 to 32 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. Some pedons have a thin A1 horizon, which has hue of 10YR, value of 3, and chroma of 1 or 2. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 to 6.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, loam, or silt loam.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6, or it has hue of 2.5Y, value of 5 or 6, and chroma of 4 to 6. Mottles with chroma of 2 or less are not within a depth of 16 inches. The Bt horizon is loam, fine sandy loam, or sandy loam. In the particle-size control section, between a depth of 10 inches and the upper boundary of the fragipan, the content of fine sand and coarser sand is more than 15 percent, the content of clay ranges from 12 to 18 percent, and the content of silt ranges from 35 to 60 percent.

The Btx horizon has colors similar to those of the Bt horizon and has mottles in shades of brown, red, or yellow and mottles with chroma of 2 or less, or it is mottled in shades of brown, yellow, red, or gray. It is loam, sandy loam, or fine sandy loam. The matrix of the prisms is very firm when dry and brittle when moist. It constitutes as much as 60 percent or more of the volume in most of the Btx horizon. In some pedons the Btx horizon has few or common iron and manganese concretions.

Providence Series

The Providence series consists of moderately well drained soils that formed in a silty deposit about 2 feet thick and in the underlying loamy sediments. These soils are on terraces and in the uplands. They have a fragipan. Slopes range from 0 to 8 percent. The soils are fine-silty, mixed, thermic Typic Fragiudalfs.

Providence soils are associated on the landscape with Lorman and Smithdale soils. Lorman soils are moderately well drained and are on uplands. They are in a fine textured family and do not have a fragipan. Smithdale soils are well drained and are in the steeper areas. They are fine-loamy and do not have a fragipan.

Typical pedon of Providence silt loam, 2 to 5 percent slopes, eroded, 3.5 miles west of Harrisville on a county road, about 30 feet south of the road and 20 feet from a power line, in a wooded area; NE¼SE¼ sec. 31, T. 2 N., R. 2 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine and medium roots; medium acid; abrupt smooth boundary.

Bt1—5 to 13 inches; yellowish brown (10YR 5/6) silt loam; few fine faint strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—13 to 22 inches; strong brown (7.5YR 4/6) silty clay loam; moderate fine and medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btx1—22 to 28 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; many fine vesicular pores; light brownish gray (10YR 6/2) silt coatings in seams between prisms; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

2Btx2—28 to 38 inches; mottled yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), and light brownish gray (10YR 6/2) silt loam that has evident amounts of sand; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; many fine vesicular pores; light brownish gray (10YR 6/2) silt coatings in seams between prisms; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

2Btx3—38 to 50 inches; mottled strong brown (7.5YR 5/6), yellowish brown (10YR 5/6), and light brownish gray (10YR 6/2) loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle; many fine vesicular pores; light brownish gray (10YR 6/2) silt coatings between prisms; few faint clay films on faces of peds; strongly acid; clear smooth boundary.

2Btx4—50 to 60 inches; red (2.5YR 4/6) loam; few fine prominent yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle; many fine vesicular pores; light brownish gray (10YR 6/2) silt coatings between prisms; sand grains coated and bridged with clay; strongly acid.

Depth to the fragipan ranges from 18 to 36 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 to 3. The Ap horizon has hue of 10YR, value of 3 to 5, and chroma of 3 to 6.

The E horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 4 to 8. It is silt loam or silty clay loam. The content of clay ranges from 20 to 30 percent, and the content of sand ranges from 5 to 15 percent.

The Btx horizon has hue of 5YR, 7.5YR, or 10YR, value of 4 or 5, and chroma of 6 to 8 and has mottles in

shades of gray, brown, or red, or it is mottled in shades of these colors and has no dominant matrix color. The upper part of the Btx horizon is silty clay loam or silt loam. The lower part is silt loam or silty clay loam that has evident amounts of sand, clay loam, sandy clay loam, loam, or sandy loam. The 2Btx horizon has colors that range from red to gray and is commonly mottled. It is sandy loam, loam, sandy clay loam, silt loam, or clay loam. In some pedons the Btx and 2Btx horizons have few to many concretions.

Quitman Series

The Quitman series consists of somewhat poorly drained soils that formed in loamy deposits. These soils are on uplands and terraces. Slopes range from 0 to 2 percent. The soils are fine-loamy, siliceous, thermic Aquic Paleudults.

Quitman soils are associated on the landscape with Jena, Kirkville, Mantachie, Prentiss, Stough, and Trebloc soils. Jena soils are well drained and are on flood plains. They are coarse-loamy. Kirkville soils are moderately well drained and are on flood plains. They are coarse-loamy. Mantachie soils are somewhat poorly drained and are on flood plains. They are fine-loamy. Prentiss soils are moderately well drained and are on terraces and in the uplands. They are coarse-loamy and have a fragipan. Stough soils are somewhat poorly drained and are in landscape positions similar to those of the Quitman soils. They are coarse-loamy. Trebloc soils are poorly drained and are on flood plains. They are fine-silty.

Typical pedon of Quitman loam, 0 to 2 percent slopes, in a pasture, 2.0 miles northeast of Union on a county road, about 0.25 mile east on a county road, and 450 feet south of the road, in a field; SE¼SW¼ sec. 24, T. 1 N., R. 2 E.

A—0 to 5 inches; grayish brown (10YR 5/2) loam; weak fine granular structure; common fine distinct dark brown (10YR 4/3) mottles; friable; many fine and medium roots; very strongly acid; clear smooth boundary.

E—5 to 10 inches; pale brown (10YR 6/3) loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium granular structure; friable; many fine and very fine roots; very strongly acid; clear smooth boundary.

Bt1—10 to 18 inches; yellowish brown (10YR 5/6) loam; few fine distinct strong brown (7.5YR 5/6) and common medium prominent light brownish gray (2.5Y 6/2) mottles; moderate medium subangular blocky structure; friable; many very fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—18 to 29 inches; mottled pale brown (10YR 6/3), light brownish gray (2.5Y 6/2), and yellowish brown (10YR 5/6) clay loam; moderate medium subangular blocky structure; friable; common very fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx1—29 to 42 inches; light brownish gray (2.5Y 6/2) clay loam; common medium prominent strong brown (7.5YR 5/8) and many medium distinct light yellowish brown (2.5Y 6/4) mottles; moderate medium subangular blocky structure; firm; slightly brittle and compact in the brown portion, which is about 10 percent of the matrix; few faint clay films on faces of peds; few fine black manganese concretions; very strongly acid; gradual wavy boundary.

Btx2—42 to 60 inches; light brownish gray (2.5Y 6/2) clay loam; many coarse distinct light yellowish brown (2.5Y 6/4) and many coarse prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; slightly brittle and compact in the brown portion, which is about 10 percent of the matrix; few faint clay films on faces of peds; few fine black manganese concretions; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The Ap horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4.

The E horizon, if it occurs, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 2 to 4. It is silt loam, loam, or fine sandy loam.

The Bt horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 5 or 6, and chroma of 4 to 8. It has few or common mottles in shades of brown and has mottles with chroma of 2 or less. It is fine sandy loam, loam, or sandy clay loam. In the particle-size control section, or the upper 20 inches of the Bt and Btx horizons, the content of clay ranges from 18 to 35 percent and the content of silt ranges from 25 to 50 percent.

The Btx horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4 and has mottles in shades of gray or brown, or it is mottled in shades of brown, gray, red, or yellow. It is loam, sandy clay loam, or clay loam. About 10 to 20 percent of the mass of the lower part, or the strong brown portion, is brittle and compact and restricts roots. This horizon has few or common black, brown, or red concretions.

Rosebloom Series

The Rosebloom series consists of poorly drained soils that formed in silty alluvium. These soils are on the flood plains along the Pearl River and its tributaries. Slopes range from 0 to 2 percent. The soils are fine-silty, mixed, acid, thermic Typic Fluvaquents.

Rosebloom soils are associated on the landscape with Bude, Columbus, and Kolin soils. Bude soils are somewhat poorly drained and are on terraces. They are fine-silty and have a fragipan. Columbus soils are moderately well drained and are on terraces. They are fine-loamy and do not have a fragipan. Kolin soils are moderately well drained and are on terraces. They are fine-silty and do not have a fragipan.

Typical pedon of Rosebloom silt loam, frequently flooded, 3.0 miles south of Union on a county road to a cross road, 1.5 miles northwest on the road and 300 feet east of the road, in a wooded area; SE¼NW¼ sec. 17, T. 10 N., R. 21 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; common fine distinct light brownish gray (10YR 6/2) mottles; weak fine granular structure; friable; few fine and medium roots; common fine red (2.5YR 4/6) stains in root channels; very strongly acid; clear smooth boundary.

Bg1—5 to 10 inches; light brownish gray (10YR 6/2) silt loam; weak medium subangular blocky structure; friable; few fine and medium roots; many fine red (2.5YR 4/6) and strong brown (7.5YR 4/6) stains in root channels; very strongly acid; clear smooth boundary.

Bg2—10 to 32 inches; gray (10YR 6/1) silt loam; weak medium subangular blocky structure; firm; plastic; few fine roots; many fine red (2.5YR 4/6) stains in root channels; very strongly acid; gradual smooth boundary.

Bg3—32 to 44 inches; gray (10YR 6/1) silty clay loam; weak medium subangular blocky structure; firm; plastic; many fine and medium yellowish red (5YR 4/6) stains in root channels; very strongly acid; gradual smooth boundary.

Bg4—44 to 60 inches; gray (10YR 6/1) silty clay loam; common coarse distinct light olive brown (2.5Y 5/4) mottles; weak coarse subangular blocky structure; firm; plastic; many fine yellowish red (5YR 4/6) stains in root channels; very strongly acid.

The thickness of the solum ranges from 40 to more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 to 3; has hue of 2.5Y, value of 5, and chroma of 2 and has few to many mottles in shades of brown or gray; or is mottled in shades of brown or brown and gray and has no dominant matrix color.

The Bg horizon has hue of 10YR or 2.5Y. It has value of 6 or 7 and chroma of 1 or 2 or value of 4 or 5 and chroma of 1. It commonly has mottles in shades of brown or red. It is silt loam or silty clay loam. In the particle-size control section, the content of clay ranges from 18 to 35 percent. In some pedons this horizon has few to many brown or black concretions or has few to many red stains or coatings.

The C horizon, if it occurs, has a matrix with hue of 10YR or 2.5Y, value of 4 to 7, and chroma of 1 or 2. It commonly has few to many mottles in shades of yellow, brown, or red.

Ruston Series

The Ruston series consists of well drained soils that formed in loamy deposits. These soils are on uplands. Slopes range from 2 to 8 percent. The soils are fine-loamy, siliceous, thermic Typic Paleudults.

Ruston soils are associated on the landscape with Ora, Savannah, and Smithdale soils. Ora soils are moderately well drained and are in landscape positions similar to those of the Ruston soils. They are fine-loamy and have a fragipan. Savannah soils are moderately well drained and are on high stream terraces and uplands. They are fine-loamy and have a fragipan. Smithdale soils are well drained and are in the steeper areas. They are fine-loamy and do not have a fragipan.

Typical pedon of Ruston fine sandy loam, 2 to 5 percent slopes, eroded, 1.75 miles west of Martinville on State Highway 540, 2.25 miles northwest on a county road, 0.2 mile north on a gravel road, and 15 feet west of the road, in a pasture; NW¼NW¼ sec. 28, T. 2 N., R. 5 E.

Ap1—0 to 4 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; medium acid; clear smooth boundary.

Ap2—4 to 7 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; medium acid; abrupt smooth boundary.

Bt1—7 to 14 inches; red (2.5YR 4/6) loam; moderate medium subangular blocky structure; friable; many fine roots; sand grains coated and bridged with clay; medium acid; gradual smooth boundary.

Bt2—14 to 22 inches; red (2.5YR 4/8) loam; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; sand grains coated

and bridged with clay; medium acid; clear wavy boundary.

B/E—22 to 39 inches; yellowish red (5YR 5/8) sandy loam (Bt); weak fine subangular blocky structure; friable; pockets of yellowish brown (10YR 5/4) sandy loam (E); slightly brittle; medium acid; clear wavy boundary.

B't1—39 to 52 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

B't2—52 to 62 inches; red (2.5YR 4/8) sandy clay loam; few fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; few faint clay films on faces of peds; strongly acid.

The thickness of the solum is more than 60 inches. Reaction ranges from very strongly acid to medium acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4.

The E horizon, if it occurs, and the E part of the B/E horizon have the same range in color as the A horizon. They are sandy loam, fine sandy loam, or loamy sand. Streaks and pockets of E material make up as much as 50 percent of the B/E horizon.

The Bt horizon, the Bt part of the B/E horizon, and the B't horizon commonly have hue of 5YR or 2.5YR, value of 4 to 6, and chroma of 4 to 8, but in some pedons the B't horizon is mottled in shades of gray, brown, red, or yellow. These horizons are sandy clay loam, fine sandy loam, loam, or clay loam. The content of clay in the upper 20 inches of the Bt horizon ranges from 18 to 30 percent. The content of clay decreases from the Bt horizon to the B/E horizon and increases in the B't horizon.

Savannah Series

The Savannah series consists of moderately well drained soils that formed in loamy deposits. These soils are on uplands and terraces. They have a fragipan. Slopes range from 2 to 8 percent. The soils are fine-loamy, siliceous, thermic Typic Fragiudults.

Savannah soils are associated on the landscape with Cahaba, Freest, Ora, Prentiss, and Ruston soils. Cahaba soils are well drained and are on terraces. They are fine-loamy and do not have a fragipan. Freest soils are moderately well drained and are on uplands. They are fine-loamy and do not have a fragipan. Ora soils are moderately well drained and are on uplands. They are fine-loamy and have a fragipan. Prentiss soils are moderately well drained and are on terraces and in the uplands in landscape positions similar to those of the Savannah soils. They are coarse-loamy and have a fragipan. Ruston soils are well drained and are on uplands. They are fine-loamy and do not have a fragipan.

Typical pedon of Savannah loam, 2 to 5 percent slopes, eroded, 1.6 miles southeast of Pinola on State Highway 28, 2.25 miles south on State Highway 43, and about 100 feet east of the highway, in a field; SW¼SE¼ sec. 13, T. 10 N., R. 19 W.

Ap1—0 to 4 inches; dark brown (10YR 4/3) loam; weak fine granular structure; friable; many fine and medium roots; strongly acid; clear smooth boundary.

Ap2—4 to 7 inches; brown (10YR 5/3) loam; weak fine granular structure; friable; common fine and medium roots; strongly acid; abrupt smooth boundary.

Bt1—7 to 19 inches; yellowish brown (10YR 5/6) loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; few medium black manganese concretions; very strongly acid; clear wavy boundary.

Bt2—19 to 26 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; clear smooth boundary.

Btx1—26 to 41 inches; light yellowish brown (10YR 6/4) loam; common medium distinct yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle in about 65 percent of the volume; few roots in seams between prisms; many fine vesicular pores; few faint clay films on faces of peds; light gray (10YR 7/2) material in seams between prisms; very strongly acid; gradual wavy boundary.

Btx2—41 to 47 inches; yellowish brown (10YR 5/8) loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle in about 65 percent of the volume; few fine roots in seams between prisms; few faint clay films in pores and on faces of peds; many fine pores; common fine vesicular pores; light gray (10YR 7/2) seams between prisms; very strongly acid; gradual wavy boundary.

Btx3—47 to 54 inches; yellowish brown (10YR 5/8) loam; common medium distinct light yellowish brown (10YR 6/4) and common medium prominent red (2.5YR 4/8) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle in about 60 percent of the volume; few faint clay films

on faces of peds; very strongly acid; gradual wavy boundary.

Btx4—54 to 62 inches; light yellowish brown (10YR 6/4) sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak very coarse prismatic structure parting to weak medium subangular blocky; firm; compact and brittle in about 60 percent of the volume; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum ranges from 50 to more than 80 inches. Depth to the fragipan ranges from 16 to 38 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The Ap horizon and the E horizon, if it occurs, have hue of 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 7.5YR or 10YR, value of 5, and chroma of 4 to 8. It is sandy clay loam, clay loam, or loam. The content of clay ranges from 18 to 32 percent, and the content of silt ranges from 20 to 50 percent.

The Btx horizon is mottled in shades of yellow, brown, red, or gray, or it has hue of 10YR, value of 5 or 6, and chroma of 4 to 8 and has mottles in shades of gray, brown, or red. It is sandy clay loam, clay loam, sandy loam, or loam.

Smithdale Series

The Smithdale series consists of well drained soils that formed in loamy deposits. These soils are on dissected uplands. Slopes range from 8 to 40 percent. The soils are fine-loamy, siliceous, thermic Typic Hapludults.

Smithdale soils are associated on the landscape with Ora, Petal, Providence, and Ruston soils. Ora soils are moderately well drained and are in the less sloping areas on uplands. They are fine-loamy and have a fragipan. Petal soils are moderately well drained and are on uplands in landscape positions similar to those of the Smithdale soils. They are fine-loamy and do not have a fragipan. Providence soils are moderately well drained and are in the less sloping areas on uplands. They are fine-silty and have a fragipan. Ruston soils are well drained and are in the less sloping areas on uplands. They are fine-loamy and do not have a fragipan.

Typical pedon of Smithdale fine sandy loam, 15 to 35 percent slopes, 1.3 miles northwest of Martinville on a county road, 450 feet west on a private road, and 75 feet north of the road, in a wooded area; SE¼NE¼ sec. 27, T. 2 N., R. 5 E.

A—0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

E—4 to 10 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bt1—10 to 26 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; common faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—26 to 37 inches; red (2.5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—37 to 48 inches; red (2.5YR 4/8) sandy loam; weak medium subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; few small pockets of brownish uncoated sand grains; strongly acid; gradual wavy boundary.

Bt4—48 to 62 inches; yellowish red (5YR 5/8) sandy loam; weak medium subangular blocky structure; very friable; sand grains coated and bridged with clay; common small pockets of brownish sand grains; strongly acid.

The thickness of the solum ranges from 60 to more than 100 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed. In some pedons quartz or ironstone gravel, which is commonly in the lower part of the B horizon, makes up as much as 10 percent of the volume.

The A horizon has hue of 10YR, value of 4, and chroma of 1 to 3. The Ap horizon, if it occurs, has hue of 10YR, value of 4 or 5, and chroma of 2 to 6. The A or Ap horizon is fine sandy loam or sandy loam.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, or loamy sand.

Some pedons have a BA or BE horizon. This horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 4 to 8. It is fine sandy loam, sandy loam, or loamy sand.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. In some pedons it has few to many mottles in shades of red, yellow, or brown. It is clay loam, sandy clay loam, or loam. In the upper 20 inches of the Bt horizon, the content of clay ranges from 18 to 33 percent and the content of silt ranges from 15 to 45 percent. The lower part of the Bt horizon has the same range in color as

the upper part, but it has few to many pockets of brown sand grains. It is loam or sandy loam. Some pedons have quartz or ironstone gravel that makes up as much as 10 percent of the volume.

Stough Series

The Stough series consists of somewhat poorly drained soils that formed in loamy deposits. These soils are on terraces and on narrow flood plains along drainageways. Slopes range from 0 to 2 percent. The soils are coarse-loamy, siliceous, thermic Fragiaquic Paleudults.

Stough soils are associated with Kirkville, Mantachie, and Quitman soils. Kirkville soils are moderately well drained and are on flood plains. They are coarse-loamy. Mantachie soils are somewhat poorly drained and are on flood plains. They are fine-loamy. Quitman soils are somewhat poorly drained and are on uplands and terraces. They are fine-loamy.

Typical pedon of Stough loam, 0 to 2 percent slopes, 3.0 miles northwest of Harrisville on State Highway 469, 1.5 miles east on a county road, 50 feet south of the road, in a field; SW¼NW¼ sec. 9, T. 2 N., R. 2 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; very friable; many fine and medium roots; very strongly acid; abrupt smooth boundary.

E—5 to 9 inches; pale brown (10YR 6/3) loam; common medium distinct dark yellowish brown (10YR 4/4) and grayish brown (10YR 5/2) mottles; weak medium granular structure; very friable; many fine and medium roots; strongly acid; clear smooth boundary.

Bt—9 to 17 inches; yellowish brown (10YR 5/4) loam; common medium faint light yellowish brown (10YR 6/4) and many distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; common medium brown concretions; very strongly acid; gradual wavy boundary.

Btx1—17 to 34 inches; yellowish brown (10YR 5/6) loam; common medium faint dark yellowish brown (10YR 4/4) and common medium distinct light brownish gray (10YR 6/2) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; brittle and compact in about 55 percent of the volume; few fine roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx2—34 to 45 inches; yellowish brown (10YR 5/6) loam; common medium distinct light brownish gray (10YR 6/2) and common medium faint strong brown (7.5YR 5/6) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; slightly compact and brittle in about 30 percent of the volume; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btx3—45 to 62 inches; light yellowish brown (10YR 6/4) sandy loam; common medium faint light brownish gray (10YR 6/2) and common fine distinct yellowish brown (10YR 5/4) mottles; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; compact and brittle in about 20 percent of the volume; common faint clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. The Ap horizon, if it occurs, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2.

The E horizon has hue of 10YR or 2.5Y, value of 6, and chroma of 2 to 4. Some pedons have an E/B or B/E horizon. The Bt part of this horizon is shades of brown, and the E part is gray. The E horizon is fine sandy loam, loam, or sandy loam.

The Bt horizon has hue of 10YR or 2.5Y and value and chroma of 4 to 6. It has few to many mottles with chroma of 2 or less. In most pedons it is mottled in shades of brown and gray. It is fine sandy loam, loam, or sandy loam. In the control section, or the upper 20 inches of the Bt horizon, the content of clay ranges from 8 to 18 percent and the content of silt is more than 20 percent.

The Btx horizon has hue of 10YR or 2.5Y and value and chroma of 4 to 6 and has few to many mottles with chroma of 2 or less, or it is mottled in shades of brown, gray, or red. The brown part, which is about 40 to 55 percent of the volume, is brittle and compact and restricts root penetration. The Btx horizon is fine sandy loam, loam, sandy loam, or sandy clay loam.

Trebloc Series

The Trebloc series consists of poorly drained soils that formed in silty deposits. These soils are on terraces and flood plains. Slopes range from 0 to 2 percent. The soils are fine-silty, siliceous, thermic Typic Paleaquults.

Trebloc soils are associated on the landscape with Jena, Mantachie, and Quitman soils. Jena soils are well drained and are on flood plains. They are coarse-loamy. Mantachie soils are somewhat poorly drained and are on flood plains. They are fine-loamy. Quitman soils are somewhat poorly drained and are on the higher terraces. They are fine-loamy.

Typical pedon of Trebloc silt loam, frequently flooded, 3.25 miles northeast of the Mendenhall intersection of U.S. Highway 49 and State Highway 13, about 100 feet west of the highway, in a pasture; NE¼NE¼ sec. 13, T. 2 N., R. 4 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; few fine distinct yellowish brown (10YR 5/4) mottles; weak medium granular structure; friable; common fine and medium roots; medium acid; abrupt smooth boundary.

Btg1—5 to 22 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct dark brown (10YR 4/3) and few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; gradual smooth boundary.

Btg2—22 to 30 inches; gray (10YR 5/1) silty clay loam; common medium prominent red (2.5YR 5/8) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btg3—30 to 38 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct light brownish gray (2.5Y 6/2), common medium prominent strong brown (7.5YR 5/6), and few fine prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btg4—38 to 50 inches; light brownish gray (10YR 6/2) silty clay loam; common medium distinct brown (7.5YR 5/4) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid; gradual smooth boundary.

Btg5—50 to 62 inches; light brownish gray (2.5Y 6/2) silty clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. Reaction is very strongly acid or strongly acid throughout the profile, except in areas where the surface layer has been limed.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The E horizon, if it occurs, has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is fine sandy loam, loam, or silt loam.

The upper part of the Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. It has few to many mottles in shades of red, yellow, or brown. It is silt loam or silty clay loam. The lower part of the Btg horizon has the same range of colors as the upper part, or it is mottled in shades of brown, gray, red, or yellow. It is silty clay loam or silty clay. In the upper 20 inches of the Btg horizon, the content of clay ranges from 20 to 32 percent and the content of silt ranges from 35 to 55 percent. In some pedons the Btg horizon has few to many black concretions.

Formation of the Soils

In this section, the factors that influence soil formation are related to the soils in Simpson County and the processes of horizon differentiation are described.

Factors of Soil Formation

Soil is the product of the combined influence of five major factors. These factors are parent material, climate, living organisms, relief, and time *(4)*. All of these factors influence every soil, but in many places one or two of the factors are dominant and affect most of the properties of a particular soil.

Parent Material

Parent material, the unconsolidated mass in which a soil forms, largely determines the chemical and mineralogical composition of a soil. The soils in Simpson County formed in material transported by wind, by the sea, and by streams.

Loess is parent material that was deposited by the wind. It has a high content of silt and a low content of sand. The loess in Simpson County is believed to be mainly glacial rock flour that was carried southward and deposited on flood plains along the Mississippi River by the streams formed by melting glaciers. The material was later redeposited by the wind on top of the older marine sediments.

Some of the soils in Simpson County formed in more than one kind of parent material. Where the overlying layer of loess is thin, the upper soil horizons formed in weathered loess and the lower horizons formed in loamy fluvial or marine sediments. Providence soils are examples.

The soils in the steeper areas of the county formed mainly in sediments laid down in marine, brackish, and fluvial environments. These sediments are mixtures of sand, silt, and clay. Smithdale soils formed in this kind of parent material.

The soils along the streams in the county formed in alluvium deposited by the streams. The alluvium is a mixture of sand, silt, and clay. Mantachie soils formed in alluvial material.

Climate

Climate is a genetic factor that affects the physical, chemical, and biological relationships of soils, primarily through precipitation and temperature. Water dissolves minerals, supports biological activity, and transports mineral and organic residue through the soil profile. The amount of water that percolates through the soil over a broad area depends mainly on rainfall, the relative humidity, and the length of the frost-free period. The amount of downward percolation also is affected by physiographic position and by the permeability of the soil. Rainfall in Simpson County averages about 55 inches per year. It rains slightly more in spring and summer than in fall and winter.

The temperature influences the kind and growth of organisms and also affects the rate of physical and chemical reactions in the soil. The present climate of Simpson County is warm and moist and is probably similar to the climate in which the soils formed. In this survey area, freezing and thawing have very little effect on weathering and on the soil-forming processes.

Living Organisms

Plant and animal life in and on the soil has an important effect on soil formation. Bacteria, fungi, and other micro-organisms contribute to the weathering of rock and the decomposition of organic matter. The larger plants alter the soil climate in small areas (soil microclimate). They also add organic matter to the soil and transfer elements from the subsoil to the surface soil.

The kinds and numbers of plants and animals that live on and in the soil are determined mainly by climate and, to a varying degree, by parent material, relief, and age of the soil.

The fungi and micro-organisms in the soils of Simpson County are mostly in the upper few inches. Earthworms and other small invertebrates are active in the surface layer, where they continually mix the soil. The activity of rodents does not appear to be a major factor of soil formation in the county.

In most parts of the survey area, the native vegetation was chiefly oak, hickory, and pine trees. In

the better drained areas of bottom land, the trees were lowland hardwoods, mainly yellow-poplar, sweetgum, ash, and oak. Cypress, birch, blackgum, beech, and water-tolerant oak trees grew mainly in the wetter areas of bottom land.

Human activities affect the formation of soils through the development of agriculture and clearing of the native vegetation. Introducing new plant species and applying fertilizer, lime, and chemicals can change the soil environment and greatly alter the surface layer. The construction of levees and dams, the installation of drainage systems, and the use of conservation practices can also affect soil development.

Relief

Relief in Simpson County ranges from nearly level on the flood plains to steep in the uplands. Because relief affects drainage and the rate of runoff, it influences the moisture conditions in soils and the rate of erosion. Thus, the amount of water that moves through a soil during its development depends partly on relief. The rate of runoff is greater on steep slopes than it is on the gentle slopes and in level areas. In level areas and in depressions, the soils are likely to be gray and wet.

The formation of a fragipan also is associated with relief and drainage. Fragipans are compact, brittle horizons in the soil. They are most strongly expressed in level to gently sloping areas under somewhat poorly drained to moderately well drained conditions. Ora, Providence, and Savannah soils are examples of soils that have a fragipan. A fragipan restricts the depth to which roots, air, and water can penetrate in the soil and affects permeability and wetness. The effects of relief and drainage are more local in scope than the other factors of soil formation, and their influence on the soil can be observed on small farms.

Time

A long time is generally required for the formation of soils that have distinct horizons. The length of time that parent material has been in place is commonly reflected in the degree to which the soil profile has developed.

The geological age of the soils in Simpson County ranges from young to old. The young soils have undergone very little profile development, and the older soils have well defined horizons.

Rosebloom soils are examples of young soils that are not well developed. These soils formed in medium textured to moderately fine textured material on flood plains. Cascilla soils are examples of older soils that formed in alluvium. These soils are medium textured to moderately fine textured and have a weakly developed soil profile. Providence soils are examples of much older soils that formed on uplands. These soils are medium textured to moderately fine textured and have distinct horizons.

Processes of Horizon Differentiation

Several processes affect the formation of soil horizons. These processes are the accumulation of organic matter, the leaching of calcium carbonates and bases, the reduction and transfer of iron, and the formation and translocation of silicate clay minerals. In most of the soils in Simpson County, more than one of these processes have been active in the development of horizons.

The accumulation of organic matter in the upper part of the soil profile is important because this accumulation results in the formation of an A horizon. The soils in Simpson County have a low content of organic matter.

Carbonates and bases have been leached from nearly all of the soils in the county. This leaching has contributed to the development of horizons. The leaching of bases from the upper horizons of a soil commonly precedes the translocation of silicate clay minerals. Most of the soils in the county are moderately to strongly leached.

The reduction and transfer of iron, a process called gleying, is evident in poorly drained soils in Simpson County. Gleying is indicated by the grayish color of the horizons below the surface layer. The segregation of iron is indicated in some horizons by reddish brown mottles and concretions.

The translocation of clay minerals has contributed to horizon development in some of the soils in Simpson County. An eluviated E horizon that is above a B horizon has a lower content of clay than the B horizon and generally is lighter in color. The B horizon commonly has accumulations of clay (clay films) in pores and on ped surfaces. Soils that have such horizons were probably leached of carbonates and soluble salts to a considerable extent before the translocation of silicate clays occurred. Providence soils are examples of soils in which translocated silicate clays have accumulated in the B horizon in the form of clay films.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness

markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to

be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, any plowed or disturbed surface layer.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, invader plants follow disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a

strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch

Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils,

slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to soil blowing and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Breaking up a compact subsoil by pulling a special chisel through the soil.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-84 at D'Lo, Mississippi)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	55.7	31.7	43.7	78	8	62	5.12	2.72	7.22	8	0.1
February----	60.4	34.4	47.4	82	14	104	5.05	2.90	6.94	7	.2
March-------	68.5	41.9	55.2	85	21	217	6.15	2.97	8.89	7	.0
April-------	77.4	51.1	64.3	89	31	429	5.82	2.37	8.73	6	.0
May---------	83.6	58.4	71.0	93	40	651	4.97	2.15	7.36	7	.0
June--------	89.6	65.1	77.4	98	49	822	3.69	1.82	5.31	7	.0
July--------	91.9	68.7	80.3	99	59	939	5.04	3.00	6.86	8	.0
August------	91.4	67.6	79.5	98	56	915	4.29	1.84	6.37	7	.0
September---	86.9	62.2	74.6	96	42	738	3.42	.97	5.40	5	.0
October-----	78.2	49.1	63.7	92	29	429	3.02	.76	4.82	4	.0
November----	67.9	39.7	53.8	85	18	171	4.35	2.01	6.35	6	.0
December----	60.4	34.3	47.4	81	13	95	6.19	3.47	8.59	8	.0
Yearly:											
Average---	76.0	50.4	63.2	---	---	---	---	---	---	---	---
Extreme---	---	---	---	100	8	---	---	---	---	---	---
Total-----	---	---	---	---	---	5,572	57.11	46.49	67.21	80	.3

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-84 at D'Lo, Mississippi)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 18	Mar. 25	Apr. 13
2 years in 10 later than--	Mar. 11	Mar. 20	Apr. 8
5 years in 10 later than--	Feb. 24	Mar. 10	Mar. 31
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 4	Oct. 26	Oct. 14
2 years in 10 earlier than--	Nov. 11	Oct. 31	Oct. 19
5 years in 10 earlier than--	Nov. 25	Nov. 10	Oct. 29

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-84 at D'Lo, Mississippi)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	240	221	197
8 years in 10	251	229	202
5 years in 10	272	245	211
2 years in 10	294	260	221
1 year in 10	305	268	226

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Br	Bruno loamy sand, frequently flooded	4,790	1.3
BuA	Bude silt loam, 0 to 2 percent slopes	3,022	0.8
CoA	Cahaba fine sandy loam, 0 to 2 percent slopes	2,340	0.6
Cs	Cascilla silt loam, occasionally flooded	1,386	0.4
CuA	Columbus silt loam, 0 to 2 percent slopes	1,071	0.3
FrB2	Freest loam, 2 to 5 percent slopes, eroded	3,680	1.0
FrC2	Freest loam, 5 to 8 percent slopes, eroded	3,787	1.0
Je	Jena fine sandy loam, occasionally flooded	12,470	3.3
Kr	Kirkville fine sandy loam, occasionally flooded	9,013	2.4
KtA	Kolin silt loam, 1 to 3 percent slopes	493	0.1
LoB2	Lorman silt loam, 2 to 5 percent slopes, eroded	350	0.1
LoD2	Lorman silt loam, 5 to 15 percent slopes, eroded	797	0.2
LoF2	Lorman silt loam, 15 to 35 percent slopes, eroded	1,748	0.5
Ma	Mantachie loam, occasionally flooded	2,523	0.7
OrB2	Ora loam, 2 to 5 percent slopes, eroded	10,175	2.7
OrC2	Ora loam, 5 to 8 percent slopes, eroded	6,495	1.7
PD	Petal and Smithdale soils, 8 to 15 percent slopes	20,549	5.4
PE	Petal and Smithdale soils, 15 to 35 percent slopes	27,418	7.2
Ph	Pits-Udorthents complex	774	0.2
PmA	Prentiss fine sandy loam, 0 to 2 percent slopes	5,502	1.5
PrA	Providence silt loam, 0 to 2 percent slopes	874	0.2
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded	7,625	2.0
PrC2	Providence silt loam, 5 to 8 percent slopes, eroded	3,618	1.0
QaA	Quitman loam, 0 to 2 percent slopes	8,293	2.2
QJT	Quitman-Jena-Trebloc association, flooded	18,318	4.8
Ro	Rosebloom silt loam, frequently flooded	2,059	0.5
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded	13,432	3.6
RuC2	Ruston fine sandy loam, 5 to 8 percent slopes, eroded	11,656	3.1
SaB2	Savannah loam, 2 to 5 percent slopes, eroded	34,662	9.1
SaC2	Savannah loam, 5 to 8 percent slopes, eroded	14,181	3.8
SdD2	Smithdale fine sandy loam, 8 to 15 percent slopes, eroded	30,909	8.2
SdF	Smithdale fine sandy loam, 15 to 35 percent slopes	39,228	10.4
SL	Smithdale sandy loam, 5 to 40 percent slopes	59,785	15.8
StA	Stough loam, 0 to 2 percent slopes	8,842	2.3
Tb	Trebloc silt loam, frequently flooded	3,515	0.9
	Water	2,720	0.7
	Total	378,100	100.0

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
BuA	Bude silt loam, 0 to 2 percent slopes
CoA	Cahaba fine sandy loam, 0 to 2 percent slopes
Cs	Cascilla silt loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
CuA	Columbus silt loam, 0 to 2 percent slopes
FrB2	Freest loam, 2 to 5 percent slopes, eroded
Je	Jena fine sandy loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
Kr	Kirkville fine sandy loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
KtA	Kolin silt loam, 1 to 3 percent slopes
Ma	Mantachie loam, occasionally flooded (where protected from flooding or not frequently flooded during the growing season)
OrB2	Ora loam, 2 to 5 percent slopes, eroded
PmA	Prentiss fine sandy loam, 0 to 2 percent slopes
PrA	Providence silt loam, 0 to 2 percent slopes
PrB2	Providence silt loam, 2 to 5 percent slopes, eroded
QaA	Quitman loam, 0 to 2 percent slopes
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded
SaB2	Savannah loam, 2 to 5 percent slopes, eroded

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Common bermuda-grass	Improved bermuda-grass	Bahiagrass
		Lbs	Bu	Bu	Bu	AUM*	AUM*	AUM*
Br-------------- Bruno	Vw	---	---	---	---	3.0	3.5	3.0
BuA------------- Bude	IIw	625	85	25	35	7.0	9.0	7.0
CoA------------- Cahaba	I	800	100	35	35	8.0	10.0	8.5
Cs-------------- Cascilla	IIw	850	110	40	35	9.0	12.0	10.0
CuA------------- Columbus	IIw	650	75	30	35	6.5	10.0	8.5
FrB2------------ Freest	IIe	400	40	25	35	6.0	7.0	8.0
FrC2------------ Freest	IIIe	350	---	20	30	5.5	6.5	7.5
Je-------------- Jena	IIw	700	85	40	40	7.0	12.0	8.5
Kr-------------- Kirkville	IIw	700	95	40	40	8.0	10.0	10.0
KtA------------- Kolin	IIe	650	75	30	40	5.5	12.0	8.5
LoB2------------ Lorman	IVe	---	---	20	---	5.0	6.0	5.5
LoD2------------ Lorman	VIe	---	---	---	---	4.0	5.0	4.0
LoF2------------ Lorman	VIIe	---	---	---	---	---	---	---
Ma-------------- Mantachie	IIw	650	90	35	40	7.5	8.5	10.0
OrB2------------ Ora	IIe	700	80	35	20	7.5	8.5	9.0
OrC2------------ Ora	IIIe	600	70	30	35	---	8.0	8.5
PD-------------- Petal and Smithdale	IVe	---	---	---	---	5.1	7.0	5.5
PE:								
Petal----------	VIe	---	---	---	---	4.5	---	---
Smithdale------	VIIe	---	---	---	---	4.5	---	---

See footnote at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Cotton lint	Corn	Soybeans	Wheat	Common bermuda-grass	Improved bermuda-grass	Bahiagrass
		Lbs	Bu	Bu	Bu	AUM*	AUM*	AUM*
Ph. Pits-Udorthents								
PmA------------- Prentiss	IIw	750	85	30	40	5.5	9.0	9.0
PrA------------- Providence	IIw	800	90	40	40	7.0	10.0	9.0
PrB2------------ Providence	IIe	700	80	35	---	6.5	9.5	8.5
PrC2------------ Providence	IIIe	650	70	30	---	6.0	9.0	8.0
QaA------------- Quitman	IIw	650	80	30	35	6.5	10.0	10.0
QJT:								
Quitman---------	IIw	650	80	30	35	6.5	10.0	10.0
Jena------------	IIw	700	85	40	40	7.0	12.0	8.5
Trebloc---------	Vw	---	---	---	---	4.5	6.0	7.0
Ro-------------- Rosebloom	Vw	---	---	---	---	4.5	7.0	---
RuB2------------ Ruston	IIe	600	65	25	45	5.5	12.0	9.5
RuC2------------ Ruston	IIIe	600	65	25	45	5.5	12.0	9.5
SaB2------------ Savannah	IIe	650	75	35	40	7.5	8.5	9.0
SaC2------------ Savannah	IIIe	600	70	30	35	6.5	8.0	9.0
SdD2------------ Smithdale	IVe	400	55	25	---	5.0	9.0	8.0
SdF, SL--------- Smithdale	VIIe	---	---	---	---	---	---	---
StA------------- Stough	IIw	725	80	25	35	5.5	8.0	8.0
Tb-------------- Trebloc	Vw	---	---	---	---	4.5	6.0	7.0

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)			
		Erosion (e)	Wetness (w)	Soil problem (s)	Climate (c)
		Acres	Acres	Acres	Acres
I	2,340	---	---	---	---
II	137,533	70,067	67,466	---	---
III	39,737	39,737	---	---	---
IV	51,807	51,807	---	---	---
V	14,393	---	14,393	---	---
VI	15,602	15,602	---	---	---
VII	113,194	113,194	---	---	---
VIII	---	---	---	---	---

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Br: Bruno	8S	Slight	Moderate	Severe	Moderate	Cherrybark oak	90	8	Cherrybark oak, Shumard oak, willow oak, sweetgum, yellow-poplar, loblolly pine.
						Water oak	90	6	
						Sweetgum	94	8	
						Willow oak	90	6	
						River birch	---	---	
						Yellow-poplar	94	7	
						Loblolly pine	93	10	
						American sycamore	100	9	
						Eastern cottonwood	110	11	
						Black willow	---	---	
BuA: Bude	10W	Slight	Moderate	Slight	Severe	Loblolly pine	98	10	Shumard oak, sweetgum, cherrybark oak, loblolly pine, southern red oak.
CoA: Cahaba	9A	Slight	Slight	Slight	Moderate	Loblolly pine	87	9	Loblolly pine, sweetgum, water oak.
						Shortleaf pine	70	8	
						Yellow-poplar	---	---	
						Sweetgum	90	7	
						Southern red oak	---	---	
						Water oak	---	---	
Cs: Cascilla	14A	Slight	Slight	Slight	Severe	Cherrybark oak	112	14	Cherrybark oak, eastern cottonwood, loblolly pine, Nuttall oak, sweetgum, American sycamore, yellow-poplar.
						Eastern cottonwood	110	11	
						Loblolly pine	93	10	
						Nuttall oak	114	---	
						Water oak	104	7	
						Sweetgum	102	10	
						Yellow-poplar	115	9	
CuA: Columbus	9W	Slight	Moderate	Slight	Moderate	Loblolly pine	90	9	Loblolly pine, sweetgum, yellow-poplar.
						Sweetgum	85	6	
						Water oak	90	6	
						Yellow-poplar	90	6	
FrB2, FrC2: Freest	9W	Slight	Moderate	Slight	Moderate	Loblolly pine	90	9	Loblolly pine.
						Shortleaf pine	80	9	
Je: Jena	11A	Slight	Slight	Slight	Moderate	Loblolly pine	100	11	Loblolly pine, water oak, American sycamore, eastern cottonwood, cherrybark oak, Shumard oak.
						Sweetgum	90	7	
						Water oak	80	5	
						Southern red oak	---	---	
						White oak	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns: Erosion hazard	Management concerns: Equip-ment limita-tion	Management concerns: Seedling mortal-ity	Management concerns: Plant competi-tion	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Produc-tivity class*	Trees to plant
Kr-------------- Kirkville	10W	Slight	Moderate	Moderate	Severe	Cherrybark oak------	100	10	Cherrybark oak, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
						Loblolly pine-------	95	10	
						Sweetgum------------	100	10	
						Water oak-----------	100	7	
KtA------------- Kolin	8A	Slight	Slight	Slight	Severe	Loblolly pine-------	85	8	Loblolly pine.
						Longleaf pine-------	---	---	
						Sweetgum------------	---	---	
						White oak-----------	---	---	
						Southern red oak----	---	---	
LoB2, LoD2------ Lorman	8C	Slight	Moderate	Slight	Severe	Loblolly pine-------	80	8	Loblolly pine, shortleaf pine.
						Shortleaf pine------	70	8	
LoF2------------ Lorman	8R	Moderate	Moderate	Slight	Severe	Loblolly pine-------	80	8	Loblolly pine, shortleaf pine.
						Shortleaf pine------	70	8	
Ma-------------- Mantachie	10W	Slight	Moderate	Moderate	Severe	Loblolly pine-------	98	10	Loblolly pine, eastern cottonwood, cherrybark oak, green ash, sweetgum, yellow-poplar.
						Eastern cottonwood--	90	7	
						Cherrybark oak------	100	10	
						Green ash-----------	80	4	
						Sweetgum------------	95	8	
						Yellow-poplar-------	95	7	
OrB2, OrC2------ Ora	9W	Slight	Slight	Slight	Moderate	Loblolly pine-------	86	9	Loblolly pine, slash pine, sweetgum.
						Longleaf pine-------	70	6	
						Sweetgum------------	85	6	
PD:									
Petal----------	9A	Slight	Moderate	Slight	Slight	Loblolly pine-------	90	9	Loblolly pine, longleaf pine, cherrybark oak.
						Longleaf pine-------	75	6	
						Shortleaf pine------	80	9	
Smithdale------	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	86	9	Loblolly pine, longleaf pine.
						Longleaf pine-------	69	5	
PE:									
Petal----------	9A	Slight	Moderate	Slight	Slight	Loblolly pine-------	90	9	Loblolly pine, longleaf pine, slash pine, cherrybark oak.
						Longleaf pine-------	75	6	
						Shortleaf pine------	80	9	
Smithdale------	9R	Moderate	Moderate	Slight	Slight	Loblolly pine-------	86	9	Loblolly pine, longleaf pine.
						Longleaf pine-------	69	5	
PmA------------- Prentiss	9W	Slight	Slight	Slight	Moderate	Loblolly pine-------	88	9	Loblolly pine.
						Shortleaf pine------	79	9	
						Sweetgum------------	90	7	
						Cherrybark oak------	90	8	
						White oak-----------	80	4	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
PrA, PrB2------- Providence	9W	Slight	Moderate	Slight	Severe	Loblolly pine-------	87	9	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
						Longleaf pine-------	73	6	
						Sweetgum------------	90	7	
PrC2------------ Providence	9W	Moderate	Moderate	Slight	Severe	Loblolly pine-------	87	9	Loblolly pine, Shumard oak, sweetgum, yellow-poplar.
						Longleaf pine-------	73	6	
						Sweetgum------------	90	7	
QaA------------- Quitman	10W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	92	10	Loblolly pine, sweetgum, American sycamore, yellow-poplar.
						Sweetgum------------	93	8	
QJT:									
Quitman--------	10W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	92	10	Loblolly pine, sweetgum, American sycamore, yellow-poplar.
						Sweetgum------------	93	8	
Jena-----------	11A	Slight	Slight	Slight	Moderate	Loblolly pine-------	100	11	Loblolly pine, water oak, American sycamore, eastern cottonwood, cherrybark oak, Shumard oak.
						Sweetgum------------	90	7	
						Water oak-----------	80	5	
						Southern red oak----	---	---	
						White oak-----------	---	---	
Trebloc--------	10W	Slight	Moderate	Severe	Severe	Loblolly pine-------	95	10	Green ash, loblolly pine, Nuttall oak, Shumard oak, sweetgum.
						Sweetgum------------	90	7	
						Water oak-----------	85	6	
						Willow oak----------	80	5	
Ro-------------- Rosebloom	9W	Slight	Severe	Moderate	Severe	Cherrybark oak------	95	9	Cherrybark oak, green ash, eastern cottonwood, Nuttall oak, water oak, willow oak, loblolly pine, sweetgum.
						Green ash-----------	95	4	
						Eastern cottonwood--	100	9	
						Nuttall oak---------	95	---	
						Water oak-----------	95	6	
						Willow oak----------	90	6	
						Sweetgum------------	95	8	
						American sycamore---	80	6	
RuB2, RuC2------ Ruston	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	91	9	Loblolly pine, longleaf pine.
						Longleaf pine-------	76	6	
						Southern red oak----	---	---	
						Post oak------------	---	---	
						Sweetgum------------	---	---	
						Hickory-------------	---	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
SaB2, SaC2------ Savannah	9W	Slight	Moderate	Slight	Moderate	Loblolly pine-------	88	9	Loblolly pine, sweetgum, American sycamore, yellow-poplar.
						Longleaf pine-------	78	7	
						Sweetgum------------	85	6	
SdD2------------ Smithdale	9A	Slight	Slight	Slight	Slight	Loblolly pine-------	86	9	Loblolly pine, longleaf pine.
						Longleaf pine-------	69	5	
SdF, SL--------- Smithdale	9R	Moderate	Moderate	Slight	Slight	Loblolly pine-------	86	9	Loblolly pine, longleaf pine.
						Longleaf pine-------	69	5	
StA------------- Stough	9W	Slight	Moderate	Slight	Severe	Loblolly pine-------	90	9	Loblolly pine, slash pine, sweetgum.
						Cherrybark oak------	85	7	
						Sweetgum------------	85	6	
						Water oak-----------	80	5	
Tb-------------- Trebloc	10W	Slight	Moderate	Severe	Severe	Loblolly pine-------	95	10	Green ash, loblolly pine, Nuttall oak, Shumard oak, sweetgum.
						Sweetgum------------	90	7	
						Water oak-----------	85	6	
						Willow oak----------	80	5	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

TABLE 9.--WOODLAND UNDERSTORY VEGETATION

(Only the soils suitable for production of commercial trees are listed)

Soil name and map symbol	Total production (Dry weight)	Characteristic vegetation	Composition
	Lb/acre		Pct
Br: Bruno	1,600	Pinehill bluestem	35
		Beaked panicum	30
		Longleaf uniola	15
		Peppervine	8
		Wild cucumber	6
		Cane	5
BuA: Bude	1,800	Pinehill bluestem	28
		Switchcane	22
		Longleaf uniola	17
CoA: Cahaba	1,000	Pinehill bluestem	35
		Slender bluestem	20
		Beaked panicum	15
		Uniola	8
		Plumegrass	5
		Wildrye	5
Cs: Cascilla	1,900	Beaked panicum	26
		Pinehill bluestem	21
		Longleaf uniola	16
CuA: Columbus	1,900	Japanese honeysuckle	15
		Sweetbay	15
		Greenbrier	10
		Plum	5
		Common trumpetcreeper	5
Kr: Kirkville	1,800	Switchgrass	25
		Longleaf uniola	20
		Little bluestem	15
		Pinehill bluestem	15
KtA: Kolin	1,800	Pinehill bluestem	50
		Switchgrass	10
		Roundseed panicum	10
LoB2, LoD2, LoF2: Lorman	1,000	Pinehill bluestem	32
		Longleaf uniola	32
		Beaked panicum	15
Ma: Mantachie	2,000	Longleaf uniola	35
		Pinehill bluestem	20
OrB2, OrC2: Ora	2,000	Longleaf uniola	30
		Pinehill bluestem	20
		Beaked panicum	15
		Switchgrass	5
		Broomsedge bluestem	5
PD, PE: Petal.			
Smithdale	1,200	Longleaf uniola	30
		Pinehill bluestem	17
		Beaked panicum	12
		Panicum	12

TABLE 9.--WOODLAND UNDERSTORY VEGETATION--Continued

Soil name and map symbol	Total production (Dry weight)	Characteristic vegetation	Composition
	Lb/acre		Pct
PrA, PrB2, PrC2: Providence	1,900	Beaked panicum	26
		Pinehill bluestem	21
		Longleaf uniola	16
		Switchcane	16
QJT:			
Quitman.			
Jena.			
Trebloc	1,200	Pinehill bluestem	25
		Cutover muhly	17
		Longleaf uniola	17
		Beaked panicum	9
RuB2, RuC2: Ruston	1,200	Longleaf uniola	50
		Pinehill bluestem	15
		Beaked panicum	10
		Panicum	10
SaB2, SaC2: Savannah	1,000	Longleaf uniola	30
		Pinehill bluestem	30
		Beaked panicum	15
		Panicum	10
SdD2, SdF, SL: Smithdale	1,200	Longleaf uniola	30
		Pinehill bluestem	17
		Beaked panicum	12
		Panicum	12
StA: Stough	1,000	Pinehill bluestem	30
		Longleaf uniola	30
		Beaked panicum	15
Tb: Trebloc	1,200	Pinehill bluestem	25
		Cutover muhly	17
		Longleaf uniola	17
		Beaked panicum	9

TABLE 10.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Br: Bruno	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
BuA: Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CoA: Cahaba	Slight	Slight	Slight	Slight	Slight.
Cs: Cascilla	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
CuA: Columbus	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight	Slight.
FrB2: Freest	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
FrC2: Freest	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness.	Moderate: wetness.
Je: Jena	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Kr: Kirkville	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
KtA: Kolin	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness.
LoB2: Lorman	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Severe: erodes easily.	Slight.
LoD2: Lorman	Severe: percs slowly.	Severe: percs slowly.	Severe: slope, percs slowly.	Severe: erodes easily.	Moderate: slope.
LoF2: Lorman	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, percs slowly.	Severe: slope, erodes easily.	Severe: slope.
Ma: Mantachie	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
OrB2: Ora	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
OrC2: Ora	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PD:					
Petal	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
PE:					
Petal	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ph:					
Pits.					
Udorthents.					
PmA Prentiss	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight	Moderate: droughty.
PrA Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
PrB2 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
PrC2 Providence	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
QaA Quitman	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
QJT:					
Quitman	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: wetness, flooding.	Moderate: wetness.	Moderate: wetness, flooding.
Jena	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Trebloc	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
Ro Rosebloom	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
RuB2 Ruston	Slight	Slight	Moderate: slope, small stones.	Slight	Slight.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
RuC2------------------ Ruston	Slight----------	Slight----------	Severe: slope.	Slight----------	Slight.
SaB2------------------ Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
SaC2------------------ Savannah	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
SdD2------------------ Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
SdF------------------- Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SL-------------------- Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
StA------------------- Stough	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Tb-------------------- Trebloc	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.

TABLE 11.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Br: Bruno	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
BuA: Bude	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CoA: Cahaba	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Cs: Cascilla	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CuA: Columbus	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FrB2: Freest	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
FrC2: Freest	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
Je: Jena	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
Kr: Kirkville	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
KtA: Kolin	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
LoB2: Lorman	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoD2: Lorman	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LoF2: Lorman	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ma: Mantachie	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
OrB2: Ora	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
OrC2: Ora	Fair	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.
PD:										
Petal	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Smithdale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 11.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
PE:										
Petal	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Smithdale	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ph:										
Pits.										
Udorthents.										
PmA Prentiss	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PrA, PrB2 Providence	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PrC2 Providence	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
QaA Quitman	Good	Good	Good	Good	---	Fair	Poor	Good	Good	Poor.
QJT:										
Quitman	Good	Good	Good	Good	---	Fair	Poor	Good	Good	Poor.
Jena	Poor	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
Trebloc	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Ro Rosebloom	Poor	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
RuB2 Ruston	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RuC2 Ruston	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SaB2 Savannah	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
SaC2 Savannah	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SdD2 Smithdale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
SdF Smithdale	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
SL Smithdale	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
StA Stough	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Tb Trebloc	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.

TABLE 12.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Br---------------- Bruno	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
BuA--------------- Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
CoA--------------- Cahaba	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
Cs---------------- Cascilla	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
CuA--------------- Columbus	Severe: cutbanks cave, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
FrB2, FrC2-------- Freest	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
Je---------------- Jena	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Kr---------------- Kirkville	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
KtA--------------- Kolin	Severe: wetness.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
LoB2-------------- Lorman	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Slight.
LoD2-------------- Lorman	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: low strength, shrink-swell.	Moderate: slope.
LoF2-------------- Lorman	Severe: slope.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength, slope, shrink-swell.	Severe: slope.
Ma---------------- Mantachie	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
OrB2-------------- Ora	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Slight.
OrC2-------------- Ora	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Slight.

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
PD:					
Petal	Moderate: too clayey, wetness, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
PE:					
Petal	Moderate: too clayey, wetness, slope.	Moderate: shrink-swell, slope.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Ph:					
Pits.					
Udorthents.					
PmA: Prentiss	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
PrA, PrB2: Providence	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
PrC2: Providence	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Severe: low strength.	Moderate: wetness.
QaA: Quitman	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
QJT:					
Quitman	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: wetness, flooding.
Jena	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Trebloc	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
Ro: Rosebloom	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
RuB2: Ruston	Severe: cutbanks cave.	Slight	Slight	Slight	Slight.
RuC2: Ruston	Severe: cutbanks cave.	Slight	Moderate: slope.	Slight	Slight.

TABLE 12.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SaB2: Savannah	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Moderate: wetness.
SaC2: Savannah	Severe: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: low strength, wetness.	Moderate: wetness.
SdD2: Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
SdF, SL: Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
StA: Stough	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Tb: Trebloc	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.

TABLE 13.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Br: Bruno	Severe: flooding, poor filter.	Severe: seepage, flooding.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage.	Poor: seepage, too sandy.
BuA: Bude	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
CoA: Cahaba	Moderate: flooding.	Severe: seepage.	Severe: seepage.	Moderate: flooding.	Fair: thin layer.
Cs: Cascilla	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too clayey.
CuA: Columbus	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: wetness.	Fair: too clayey, wetness, thin layer.
FrB2, FrC2: Freest	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
Je: Jena	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding.	Good.
Kr: Kirkville	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
KtA: Kolin	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
LoB2: Lorman	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
LoD2: Lorman	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
LoF2: Lorman	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Ma: Mantachie	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
OrB2, OrC2: Ora	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.

TABLE 13.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PD:					
Petal	Severe: wetness, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
PE:					
Petal	Severe: wetness, percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Ph:					
Pits.					
Udorthents.					
PmA Prentiss	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
PrA, PrB2, PrC2 Providence	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
QaA Quitman	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
QJT:					
Quitman	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Fair: too clayey, wetness.
Jena	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding, seepage.	Severe: flooding.	Good.
Trebloc	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, wetness.
Ro Rosebloom	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
RuB2, RuC2 Ruston	Slight	Moderate: seepage, slope.	Moderate: too sandy.	Slight	Fair: too sandy.
SaB2, SaC2 Savannah	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.

TABLE 13.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
SdD2: Smithdale	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
SdF, SL: Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
StA: Stough	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Tb: Trebloc	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, wetness.

TABLE 14.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Br-------------------- Bruno	Good	Probable	Improbable: too sandy.	Poor: too sandy.
BuA------------------- Bude	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
CoA------------------- Cahaba	Good	Probable	Improbable: too sandy.	Fair: too clayey.
Cs-------------------- Cascilla	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
CuA------------------- Columbus	Fair: wetness.	Probable	Improbable: too sandy.	Fair: too clayey, small stones.
FrB2, FrC2------------ Freest	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Je-------------------- Jena	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Kr-------------------- Kirkville	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
KtA------------------- Kolin	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, too clayey.
LoB2, LoD2------------ Lorman	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
LoF2------------------ Lorman	Poor: low strength, slope, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Ma-------------------- Mantachie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
OrB2, OrC2------------ Ora	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
PD:				
Petal-----------------	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer, slope.

TABLE 14.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PD:				
Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
PE:				
Petal	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer, slope.
Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ph:				
Pits.				
Udorthents.				
PmA: Prentiss	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
PrA, PrB2, PrC2: Providence	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
QaA: Quitman	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
QJT:				
Quitman	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Jena	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Trebloc	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ro: Rosebloom	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RuB2, RuC2: Ruston	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
SaB2, SaC2: Savannah	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
SdD2: Smithdale	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
SdF: Smithdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

TABLE 14.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SL: Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
StA: Stough	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Tb: Trebloc	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

TABLE 15.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--: Pond reservoir areas	Limitations for--: Embankments, dikes, and levees	Limitations for--: Aquifer-fed excavated ponds	Features affecting--: Drainage	Features affecting--: Irrigation	Features affecting--: Terraces and diversions	Features affecting--: Grassed waterways
Br: Bruno	Severe: seepage.	Severe: seepage, piping.	Severe: cutbanks cave.	Deep to water	Droughty, fast intake.	Too sandy	Droughty.
BuA: Bude	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
CoA: Cahaba	Severe: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
Cs: Cascilla	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
CuA: Columbus	Severe: seepage.	Moderate: thin layer, piping, wetness.	Severe: cutbanks cave.	Favorable	Wetness, erodes easily.	Erodes easily, wetness.	Erodes easily.
FrB2, FrC2: Freest	Moderate: slope.	Severe: wetness.	Severe: slow refill.	Percs slowly, slope.	Wetness, percs slowly, slope.	Wetness, percs slowly.	Percs slowly.
Je: Jena	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, flooding.	Favorable	Favorable.
Kr: Kirkville	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness	Wetness	Favorable.
KtA: Kolin	Slight	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.
LoB2: Lorman	Moderate: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
LoD2, LoF2: Lorman	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
Ma: Mantachie	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding	Wetness, flooding.	Wetness	Wetness.

TABLE 15.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
OrB2, OrC2: Ora	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: no water.	Slope	Slope, wetness.	Erodes easily, wetness.	Erodes easily.
PD, PE:							
Petal	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly, slope.	Slope, wetness, percs slowly.	Slope, percs slowly.
Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Ph:							
Pits.							
Udorthents.							
PmA: Prentiss	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable	Wetness, droughty.	Wetness, rooting depth.	Droughty, rooting depth.
PrA: Providence	Moderate: seepage.	Moderate: thin layer, piping, wetness.	Severe: no water.	Favorable	Wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
PrB2, PrC2: Providence	Moderate: seepage, slope.	Moderate: thin layer, piping, wetness.	Severe: no water.	Slope	Slope, wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
QaA: Quitman	Slight	Moderate: piping, wetness.	Severe: no water.	Favorable	Wetness	Wetness, soil blowing.	Favorable.
QJT:							
Quitman	Slight	Moderate: piping, wetness.	Severe: no water.	Flooding	Wetness	Wetness, soil blowing.	Favorable.
Jena	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, flooding.	Favorable	Favorable.
Trebloc	Slight	Severe: wetness.	Severe: slow refill.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.
Ro: Rosebloom	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.

TABLE 15.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
RuB2, RuC2: Ruston	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too sandy, soil blowing.	Favorable.
SaB2, SaC2: Savannah	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope	Slope, wetness.	Erodes easily, wetness.	Erodes easily, rooting depth.
SdD2, SdF, SL: Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
StA: Stough	Slight	Moderate: piping, wetness.	Severe: no water.	Favorable	Wetness, droughty.	Erodes easily, wetness.	Wetness, erodes easily, droughty.
Tb: Trebloc	Slight	Severe: wetness.	Severe: slow refill.	Flooding	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Wetness, erodes easily.

TABLE 16.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
Br-- Bruno	0-4	Loamy sand	SM	A-2	100	100	50-75	15-30	---	NP
	4-60	Sand, loamy sand, loamy fine sand.	SP-SM, SM	A-2	100	100	60-80	10-30	---	NP
BuA-- Bude	0-16	Silt loam	CL	A-6	100	100	95-100	85-96	25-40	11-25
	16-30	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	95-100	84-98	35-50	15-30
	30-62	Silt loam, clay loam, silty clay loam.	CL, CH	A-7, A-6	100	100	95-100	75-90	35-65	15-40
CoA-- Cahaba	0-5	Fine sandy loam	SM	A-4, A-2-4	95-100	95-100	65-90	30-45	---	NP
	5-48	Sandy clay loam, loam, clay loam.	SC, CL	A-4, A-6	90-100	80-100	75-90	40-75	22-35	8-15
	48-70	Sand, loamy sand, sandy loam.	SM, SP-SM	A-2-4	95-100	90-100	60-85	10-35	---	NP
Cs-- Cascilla	0-6	Silt loam	ML, CL-ML, CL	A-4, A-6	100	100	95-100	75-95	20-38	3-15
	6-62	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	100	100	95-100	75-100	20-39	5-15
CuA-- Columbus	0-6	Silt loam	ML, CL-ML, CL	A-4	100	100	90-100	70-90	<30	3-10
	6-48	Clay loam, loam, sandy clay loam.	CL, SC	A-4, A-6	100	90-100	80-95	40-80	22-35	8-15
	48-60	Sandy loam, loamy sand, sand.	SM, SP-SM	A-2, A-4	100	90-100	50-85	10-45	<20	NP-4
FrB2-- Freest	0-6	Loam	SM, CL, ML, CL-ML	A-4	100	95-100	60-90	40-70	<30	NP-8
	6-30	Loam, sandy clay loam.	CL	A-4, A-6	100	95-100	80-95	55-75	25-40	7-20
	30-60	Clay loam, clay, silty clay.	CL, CH	A-7	100	95-100	90-100	80-95	41-55	20-30
FrC2-- Freest	0-7	Loam	SM, CL, ML, CL-ML	A-4	100	95-100	60-90	40-70	<30	NP-8
	7-28	Loam, sandy clay loam.	CL	A-4, A-6	100	95-100	80-95	55-75	25-40	7-20
	28-60	Clay loam, clay, silty clay.	CL, CH	A-7	100	95-100	90-100	80-95	41-55	20-30
Je-- Jena	0-8	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-4, A-2-4	100	100	60-85	25-55	10-28	NP-10
	8-34	Silt loam, very fine sandy loam, loam.	CL, CL-ML, SC-SM	A-4, A-2-4	100	100	55-90	25-70	15-30	5-10
	34-62	Fine sandy loam, sandy loam, loamy fine sand.	SM	A-2-4, A-4	100	100	50-80	20-50	---	NP
Kr-- Kirkville	0-5	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-2, A-4	100	100	60-85	30-65	<20	NP-5
	5-62	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SC-SM	A-2, A-4	100	100	60-100	30-80	<25	NP-5

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
KtA--------------	0-8	Silt loam--------	ML, CL-ML	A-4	100	100	85-100	60-85	<27	NP-7
Kolin	8-28	Silty clay loam, silt loam.	CL	A-6, A-7-6	100	100	95-100	85-97	30-46	11-22
	28-64	Clay, silty clay	CH	A-7-6	100	100	90-100	75-95	50-63	25-35
LoB2-------------	0-5	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	90-100	70-95	20-35	5-15
Lorman	5-56	Clay, silty clay, silty clay loam.	CL, CH	A-7	95-100	95-100	95-100	90-95	44-85	20-50
	56-62	Variable---------	---	---	---	---	---	---	---	---
LoD2-------------	0-5	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	90-100	70-95	20-35	5-15
Lorman	5-32	Clay, silty clay, silty clay loam.	CL, CH	A-7	95-100	95-100	95-100	90-95	44-85	20-50
	32-60	Variable---------	---	---	---	---	---	---	---	---
LoF2-------------	0-5	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	90-100	70-95	20-35	5-15
Lorman	5-48	Clay, silty clay, silty clay loam.	CL, CH	A-7	95-100	95-100	95-100	90-95	44-85	20-50
	48-62	Variable---------	---	---	---	---	---	---	---	---
Ma---------------	0-6	Loam-------------	CL-ML, SC-SM, SM, ML	A-4	95-100	90-100	60-85	40-60	<20	NP-5
Mantachie	6-62	Loam, clay loam, sandy clay loam.	CL, SC, SC-SM, CL-ML	A-4, A-6	95-100	90-100	80-95	45-80	20-40	5-15
OrB2-------------	0-6	Loam-------------	ML, CL-ML	A-4	100	95-100	80-100	60-90	<30	NP-5
Ora	6-24	Clay loam, sandy clay loam, loam.	CL	A-6, A-4, A-7	100	95-100	80-100	50-80	25-48	8-22
	24-55	Sandy clay loam, loam, sandy loam.	CL	A-6, A-7, A-4	100	95-100	80-100	50-75	25-43	8-25
	55-65	Sandy clay loam, loam, sandy loam.	CL	A-6, A-7	100	95-100	80-98	50-60	30-49	11-30
OrC2-------------	0-5	Loam-------------	ML, CL-ML	A-4	100	95-100	80-100	60-90	<30	NP-5
Ora	5-20	Clay loam, sandy clay loam, loam.	CL	A-6, A-4, A-7	100	95-100	80-100	50-80	25-48	8-22
	20-62	Sandy clay loam, loam, sandy loam.	CL	A-6, A-7, A-4	100	95-100	80-100	50-75	25-43	8-25
PD:										
Petal-----------	0-8	Fine sandy loam	SM, CL, ML, CL-ML	A-4	100	95-100	60-100	40-70	<30	NP-8
	8-38	Loam, sandy clay loam, clay loam.	CL	A-4, A-6	100	95-100	80-100	55-75	25-40	7-20
	38-60	Clay loam, silty clay, clay.	CL, CH, MH	A-6, A-7	100	95-100	90-100	80-95	38-60	20-30
Smithdale-------	0-10	Fine sandy loam	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	10-50	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	50-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
PE:										
Petal-----------	0-13	Fine sandy loam	SM, CL, ML, CL-ML	A-4	100	95-100	60-90	40-70	<30	NP-8
	13-32	Loam, sandy clay loam, clay loam.	CL	A-4, A-6	100	95-100	80-95	55-75	25-40	7-20
	32-60	Clay loam, silty clay, clay.	CL, CH, MH	A-6, A-7	100	95-100	90-100	80-95	38-55	20-30
Smithdale-------	0-14	Fine sandy loam	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	14-30	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	30-62	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
Ph:										
Pits.										
Udorthents.										
PmA-------------- Prentiss	0-9	Fine sandy loam	SC, SC-SM, SM	A-4	100	100	65-85	36-50	<30	NP-10
	9-29	Loam, silt loam, fine sandy loam.	ML, CL, CL-ML	A-4, A-2	100	100	75-100	50-90	<30	NP-12
	29-62	Loam, sandy loam, fine sandy loam.	CL-ML, CL, SC, SC-SM	A-6, A-4	100	100	70-100	40-75	20-35	4-12
PrA-------------- Providence	0-10	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	10-24	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	24-32	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	32-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
PrB2------------- Providence	0-5	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	5-22	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	22-38	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	38-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
PrC2------------- Providence	0-6	Silt loam--------	ML, CL, CL-ML	A-4	100	100	100	85-100	<30	NP-10
	6-22	Silty clay loam, silt loam.	CL	A-7, A-6	100	100	95-100	85-100	30-45	11-20
	22-42	Silt loam, silty clay loam.	CL	A-6	100	100	90-100	70-90	25-40	11-20
	42-60	Loam, clay loam, sandy clay loam.	CL, SC	A-6, A-4	100	95-100	70-95	40-80	20-35	8-18
QaA-------------- Quitman	0-10	Loam-------------	SM, ML	A-4, A-2	100	100	85-100	30-55	<20	NP-3
	10-29	Fine sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SC-SM	A-4, A-6	100	100	90-100	40-70	20-35	4-15
	29-60	Sandy clay loam, loam, clay loam.	CL, SC	A-6, A-7	100	100	90-100	40-65	25-45	11-20

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In								Pct	
QJT:										
Quitman---------	0-9	Loam-------------	SM, ML	A-4, A-2	100	100	85-100	30-55	<20	NP-3
	9-31	Fine sandy loam, loam, sandy clay loam.	SC, CL, CL-ML, SC-SM	A-4, A-6	100	100	90-100	40-70	20-35	4-15
	31-60	Sandy clay loam, loam, clay loam.	CL, SC	A-6, A-7	100	100	90-100	40-65	25-45	11-20
Jena-----------	0-5	Fine sandy loam	ML, SM, CL-ML, SC-SM	A-4, A-2-4	100	100	60-85	25-55	10-28	NP-10
	5-32	Silt loam, very fine sandy loam, loam.	CL, CL-ML, SC-SM	A-4, A-2-4	100	100	55-90	25-70	15-30	5-10
	32-62	Fine sandy loam, sandy loam, loamy fine sand.	SM	A-2-4, A-4	100	100	50-80	20-50	---	NP
Trebloc---------	0-5	Silt loam--------	ML, CL-ML	A-4	100	100	85-100	60-90	<30	NP-7
	5-18	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	85-100	85-100	25-40	8-16
	18-60	Silty clay loam, silty clay.	CL	A-4, A-6, A-7	100	100	85-100	85-100	25-48	8-21
Ro--------------- Rosebloom	0-5	Silt loam--------	CL	A-4, A-6	100	100	90-100	80-95	28-40	9-20
	5-60	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	90-100	85-100	28-40	9-20
RuB2------------- Ruston	0-7	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	100	85-100	65-85	30-55	<20	NP-7
	7-22	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	100	85-100	80-95	36-75	25-45	11-20
	22-39	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	100	85-100	65-85	30-75	<27	NP-7
	39-62	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	100	85-100	80-95	36-75	25-45	11-20
RuC2------------- Ruston	0-5	Fine sandy loam	SM, ML, CL-ML	A-4, A-2-4	100	85-100	65-85	30-55	<20	NP-7
	5-31	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	100	85-100	80-95	36-75	25-45	11-20
	31-48	Fine sandy loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	100	85-100	65-85	30-75	<27	NP-7
	48-62	Sandy clay loam, loam, clay loam.	SC, CL	A-6, A-7-6	100	85-100	80-95	36-75	25-45	11-20
SaB2------------- Savannah	0-7	Loam-------------	ML, CL-ML	A-4	100	90-100	80-100	60-90	<25	NP-7
	7-26	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	26-62	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19
SaC2------------- Savannah	0-4	Loam-------------	ML, CL-ML	A-4	100	90-100	80-100	60-90	<25	NP-7
	4-20	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	98-100	90-100	80-100	40-80	23-40	7-19
	20-80	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7, A-2	94-100	90-100	60-100	30-80	23-43	7-19

TABLE 16.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
SdD2-------------Smithdale	0-6	Fine sandy loam	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	6-29	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	29-60	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
SdF--------------Smithdale	0-10	Fine sandy loam	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	10-37	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	37-62	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
SL---------------Smithdale	0-17	Sandy loam-------	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	17-55	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	55-62	Loam, sandy loam	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	NP-10
StA--------------Stough	0-9	Loam-------------	ML, CL-ML	A-4	100	100	75-95	50-65	<25	NP-7
	9-17	Loam, fine sandy loam, sandy loam.	ML, CL, CL-ML	A-4	100	100	75-95	50-75	<25	8-15
	17-62	Sandy loam, sandy clay loam, loam.	SC, SL	A-4, A-6	100	100	65-90	40-65	25-40	NP-7
Tb---------------Trebloc	0-5	Silt loam--------	ML, CL-ML	A-4	100	100	85-100	60-90	<30	NP-7
	5-22	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	85-100	85-100	25-40	8-16
	22-62	Silty clay loam, silty clay.	CL	A-4, A-6, A-7	100	100	85-100	85-100	25-48	8-21

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Br-----	0-4	4-8	1.40-1.60	6.0-20	0.05-0.10	5.1-7.3	Low-----	0.15	5	.5-2
Bruno	4-60	2-8	1.40-1.60	6.0-20	0.05-0.10	5.1-7.3	Low-----	0.15		
BuA-----	0-16	10-27	1.40-1.60	0.6-2.0	0.21-0.24	4.5-6.0	Low-----	0.49	3	.5-2
Bude	16-30	10-32	1.40-1.65	0.06-0.2	0.14-0.23	4.5-6.0	Moderate-----	0.43		
	30-62	16-32	1.40-1.65	0.06-0.2	0.11-0.23	4.5-6.0	Moderate-----	0.37		
CoA-----	0-5	7-17	1.35-1.60	2.0-6.0	0.10-0.14	4.5-6.0	Low-----	0.24	5	.5-2
Cahaba	5-48	18-35	1.35-1.60	0.6-2.0	0.12-0.20	4.5-6.0	Low-----	0.28		
	48-70	4-20	1.40-1.70	2.0-20	0.05-0.10	4.5-6.0	Low-----	0.24		
Cs-----	0-6	5-20	1.40-1.50	0.6-2.0	0.18-0.22	4.5-5.5	Low-----	0.43	5	1-3
Cascilla	6-62	18-30	1.45-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.43		
CuA-----	0-6	10-16	1.50-1.55	0.6-2.0	0.20-0.22	4.5-5.5	Low-----	0.37	4	2-3
Columbus	6-48	18-33	1.55-1.60	0.6-2.0	0.12-0.15	4.5-5.5	Low-----	0.20		
	48-60	6-12	1.35-1.40	6.0-20	0.05-0.10	4.5-5.5	Low-----	0.17		
FrB2-----	0-6	3-10	1.40-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.28	5	.5-2
Freest	6-30	18-35	1.40-1.50	0.2-0.6	0.15-0.18	4.5-6.0	Moderate-----	0.32		
	30-60	27-50	1.40-1.55	0.06-0.2	0.15-0.18	4.5-7.3	High-----	0.28		
FrC2-----	0-7	3-10	1.40-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low-----	0.28	5	.5-3
Freest	7-28	18-35	1.40-1.50	0.2-0.6	0.15-0.18	4.5-6.0	Moderate-----	0.32		
	28-60	27-50	1.40-1.55	0.06-0.2	0.15-0.18	4.5-7.3	High-----	0.28		
Je-----	0-8	10-20	1.30-1.70	0.6-2.0	0.12-0.20	4.5-6.5	Low-----	0.28	5	.5-2
Jena	8-34	10-18	1.30-1.70	0.6-2.0	0.10-0.20	4.5-5.5	Low-----	0.28		
	34-62	5-20	1.35-1.65	2.0-6.0	0.08-0.14	4.5-5.5	Low-----	0.24		
Kr-----	0-5	6-20	1.30-1.50	0.6-2.0	0.15-0.15	4.5-5.5	Low-----	0.28	5	.5-2
Kirkville	5-62	6-18	1.35-1.55	0.6-2.0	0.10-0.22	4.5-5.5	Low-----	0.28		
KtA-----	0-8	10-27	1.35-1.65	0.6-2.0	0.18-0.22	5.1-6.5	Low-----	0.49	5	.5-4
Kolin	8-28	20-35	1.35-1.65	0.2-0.6	0.18-0.22	4.5-6.0	Moderate-----	0.37		
	28-64	40-55	1.20-1.50	<0.06	0.15-0.18	4.5-6.5	High-----	0.32		
LoB2-----	0-5	10-27	1.30-1.65	0.6-2.0	0.20-0.22	4.5-6.5	Low-----	0.43	4	.5-1
Lorman	5-56	35-55	1.20-1.50	<0.06	0.16-0.20	4.5-7.8	Very high----	0.32		
	56-62	35-55	1.20-1.50	<0.06	0.16-0.20	4.5-7.8	Very high----	0.32		
LoD2-----	0-5	10-27	1.30-1.65	0.6-2.0	0.20-0.22	4.5-6.5	Low-----	0.43	4	.5-1
Lorman	5-32	35-55	1.20-1.50	<0.06	0.16-0.20	4.5-7.8	Very high----	0.32		
	32-60	35-55	1.20-1.50	<0.06	0.16-0.20	4.5-7.8	Very high----	0.32		
LoF2-----	0-5	10-27	1.30-1.65	0.6-2.0	0.20-0.22	4.5-6.5	Low-----	0.43	4	.5-1
Lorman	5-48	35-55	1.20-1.50	<0.06	0.16-0.20	4.5-7.8	Very high----	0.32		
	48-62	35-55	1.20-1.50	<0.06	0.16-0.20	4.5-7.8	Very high----	0.32		
Ma-----	0-6	8-20	1.50-1.60	0.6-2.0	0.16-0.20	4.5-5.5	Low-----	0.28	5	1-3
Mantachie	6-62	18-34	1.50-1.60	0.6-2.0	0.14-0.20	4.5-5.5	Low-----	0.28		
OrB2-----	0-6	10-25	1.45-1.55	2.0-6.0	0.18-0.20	3.6-5.5	Low-----	0.37	3	1-3
Ora	6-24	18-33	1.45-1.60	0.6-2.0	0.12-0.18	3.6-5.5	Low-----	0.37		
	24-55	18-33	1.70-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low-----	0.32		
	55-65	10-35	1.65-1.75	0.6-2.0	0.10-0.15	3.6-5.5	Low-----	0.37		

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
OrC2-------------	0-5	10-25	1.45-1.55	2.0-6.0	0.18-0.20	3.6-5.5	Low----------	0.37	3	1-3
Ora	5-20	18-33	1.45-1.60	0.6-2.0	0.12-0.18	3.6-5.5	Low----------	0.37		
	20-62	18-33	1.70-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low----------	0.32		
PD:										
Petal-----------	0-8	16-20	1.40-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28	5	.5-2
	8-38	20-35	1.45-1.55	0.2-0.6	0.15-0.18	4.5-5.5	Moderate-----	0.32		
	38-60	30-50	1.40-1.55	0.06-0.2	0.15-0.18	4.5-5.5	High---------	0.32		
Smithdale-------	0-10	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	10-50	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	50-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
PE:										
Petal-----------	0-13	16-20	1.40-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low----------	0.28	5	.5-2
	13-32	20-35	1.45-1.55	0.2-0.6	0.15-0.18	4.5-5.5	Moderate-----	0.32		
	32-60	30-50	1.40-1.55	0.06-0.2	0.15-0.18	4.5-5.5	High---------	0.32		
Smithdale-------	0-14	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-2
	14-30	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	30-62	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Ph:										
Pits.										
Udorthents.										
PmA--------------	0-9	5-18	1.50-1.60	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28	3	1-3
Prentiss	9-29	5-18	0.80-1.50	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.37		
	29-62	10-20	1.65-1.75	0.2-0.6	0.06-0.09	4.5-5.5	Low----------	0.24		
PrA--------------	0-10	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
Providence	10-24	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	24-32	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
	32-60	12-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
PrB2-------------	0-5	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
Providence	5-22	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	22-38	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
	38-60	12-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
PrC2-------------	0-6	5-12	1.30-1.40	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.49	3	.5-3
Providence	6-22	18-30	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	22-42	20-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
	42-60	12-30	1.40-1.60	0.2-0.6	0.08-0.10	4.5-6.0	Low----------	0.32		
QaA--------------	0-10	5-15	1.35-1.65	0.6-2.0	0.15-0.24	4.5-5.5	Low----------	0.28	5	1-3
Quitman	10-29	18-35	1.45-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
	29-60	18-35	1.45-1.70	0.2-0.6	0.11-0.17	4.5-5.5	Low----------	0.28		
QJT:										
Quitman---------	0-9	5-15	1.35-1.65	0.6-2.0	0.15-0.24	4.5-5.5	Low----------	0.28	5	1-3
	9-31	18-35	1.45-1.70	0.6-2.0	0.12-0.17	4.5-5.5	Low----------	0.28		
	31-60	18-35	1.45-1.70	0.2-0.6	0.11-0.17	4.5-5.5	Low----------	0.28		
Jena------------	0-5	10-20	1.30-1.70	0.6-2.0	0.12-0.20	4.5-6.0	Low----------	0.28	5	.5-2
	5-32	10-18	1.30-1.70	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.28		
	32-62	5-20	1.35-1.65	2.0-6.0	0.08-0.14	4.5-5.5	Low----------	0.24		

TABLE 17.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
QJT:										
Trebloc	0-5	5-20	1.40-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.43	5	1-3
	5-18	20-32	1.45-1.55	0.2-0.6	0.15-0.20	4.5-5.5	Moderate	0.37		
	18-60	20-45	1.45-1.55	0.2-0.6	0.14-0.18	4.5-5.5	Moderate	0.37		
Ro Rosebloom	0-5	18-25	1.40-1.55	0.6-2.0	0.2-0.22	4.5-5.5	Low	0.43	5	1-3
	5-60	20-35	1.40-1.55	0.6-2.0	0.2-0.22	4.5-5.5	Low	0.37		
RuB2 Ruston	0-7	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low	0.28	5	.5-3
	7-22	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.28		
	22-39	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low	0.28		
	39-62	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.28		
RuC2 Ruston	0-5	2-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low	0.28	5	.5-3
	5-31	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.28		
	31-48	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low	0.28		
	48-62	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.28		
SaB2 Savannah	0-7	3-16	1.40-1.60	0.6-2.0	0.15-0.24	3.6-5.5	Low	0.37	3	.5-3
	7-26	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low	0.28		
	26-62	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.24		
SaC2 Savannah	0-4	3-16	1.40-1.60	0.6-2.0	0.15-0.24	3.6-5.5	Low	0.37	3	.5-3
	4-20	18-32	1.45-1.65	0.6-2.0	0.11-0.17	3.6-5.5	Low	0.28		
	20-80	18-32	1.60-1.80	0.2-0.6	0.05-0.10	3.6-5.5	Low	0.24		
SdD2 Smithdale	0-6	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28	5	.5-2
	6-29	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low	0.24		
	29-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28		
SdF Smithdale	0-10	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28	5	.5-2
	10-37	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low	0.24		
	37-62	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28		
SL Smithdale	0-17	2-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28	5	.5-2
	17-55	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low	0.24		
	55-62	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28		
StA Stough	0-9	7-15	1.45-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low	0.37	3	1-4
	9-17	8-18	1.45-1.50	0.2-0.6	0.07-0.11	4.5-5.5	Low	0.37		
	17-62	5-27	1.55-1.65	0.2-0.6	0.07-0.11	4.5-5.5	Low	0.37		
Tb Trebloc	0-5	5-20	1.40-1.50	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.43	5	1-3
	5-22	20-32	1.45-1.55	0.2-0.6	0.15-0.20	4.5-5.5	Moderate	0.37		
	22-62	20-45	1.45-1.55	0.2-0.6	0.14-0.18	4.5-5.5	Moderate	0.37		

TABLE 18.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft				
Br----------------- Bruno	A	Frequent----	Brief-----	Dec-Jun	4.0-6.0	Apparent	Dec-Apr	Low------	Low.
BuA--------------- Bude	C	None--------	---	---	0.5-1.5	Perched	Jan-Apr	High-----	High.
CoA--------------- Cahaba	B	Rare--------	---	---	>6.0	---	---	Moderate	Moderate.
Cs---------------- Cascilla	B	Occasional	Very brief or brief.	Jan-Apr	>6.0	---	---	Low------	Moderate.
CuA--------------- Columbus	C	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	High-----	High.
FrB2, FrC2-------- Freest	C	None--------	---	---	1.5-2.5	Apparent	Jan-Apr	High-----	High.
Je---------------- Jena	B	Occasional	Very brief	Dec-Apr	>6.0	---	---	Low------	High.
Kr---------------- Kirkville	C	Occasional	Brief-----	Jan-Apr	1.5-2.5	Apparent	Jan-Apr	Moderate	High.
KtA--------------- Kolin	C	None--------	---	---	1.5-3.0	Perched	Dec-Apr	High-----	Moderate.
LoB2, LoD2, LoF2-- Lorman	D	None--------	---	---	>6.0	---	---	High-----	Moderate.
Ma---------------- Mantachie	C	Occasional	Brief-----	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	High-----	High.
OrB2, OrC2-------- Ora	C	None--------	---	---	2.0-3.5	Perched	Feb-Apr	Moderate	High.
PD, PE:									
Petal------------	C	None--------	---	---	2.5-3.5	Perched	Jan-Apr	High-----	High.
Smithdale--------	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
Ph:									
Pits.									
Udorthents.									
PmA--------------- Prentiss	C	None--------	---	---	2.0-2.5	Perched	Jan-Mar	Moderate	High.
PrA, PrB2, PrC2--- Providence	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	Moderate.
QaA--------------- Quitman	C	None--------	---	---	1.5-2.0	Perched	Jan-Mar	High-----	Moderate.

TABLE 18.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
QJT:									
Quitman----------	C	Occasional	Brief-----	Dec-May	1.5-2.0	Perched	Jan-Mar	High-----	Moderate.
Jena-------------	B	Occasional	Very brief	Dec-Apr	>6.0	---	---	Low------	High.
Trebloc----------	D	Frequent----	Long------	Jan-Apr	0.5-1.0	Apparent	Jan-Apr	High-----	High.
Ro---------------- Rosebloom	D	Frequent----	Brief to very long.	Jan-Mar	0-1.0	Apparent	Jan-Mar	High-----	Moderate.
RuB2, RuC2-------- Ruston	B	None--------	---	---	>6.0	---	---	Moderate	Moderate.
SaB2, SaC2-------- Savannah	C	None--------	---	---	1.5-3.0	Perched	Jan-Mar	Moderate	High.
SdD2, SdF, SL----- Smithdale	B	None--------	---	---	>6.0	---	---	Low------	Moderate.
StA--------------- Stough	C	None--------	---	---	1.0-1.5	Perched	Jan-Apr	Moderate	High.
Tb---------------- Trebloc	D	Frequent----	Brief or long.	Jan-Apr	0.5-1.0	Apparent	Jan-Apr	High-----	High.

TABLE 19.--PHYSICAL AND CHEMICAL ANALYSES OF SELECTED SOILS

(Analyses by the Soil Genesis and Morphology Laboratory, Mississippi Agricultural and Forestry Experiment Station. The pedons are typical of the series in the survey area. For a description of the soils and their location, see the section "Soil Series and Their Morphology")

Soil name	Horizon	Depth	Particle-size distribution: Sand (2.0-0.05 mm)	Particle-size distribution: Silt (0.05-0.002 mm)	Particle-size distribution: Clay (<0.002 mm)	Extractable bases: Ca	Extractable bases: Mg	Extractable bases: K	Extractable bases: Na	Extractable acidity	Sum of cations	Base saturation	Reaction 1:1 soil:water	Organic matter
		In	Pct	Pct	Pct	Milliequivalents/100 grams of soil	Milliequivalents/100 grams of soil	Milliequivalents/100 grams of soil	Milliequivalents/100 grams of soil	Milliequivalents/100 grams of soil	Milliequivalents/100 grams of soil	Pct	pH	Pct
Columbus	Ap	0-5	19.7	63.2	17.1	1.43	0.73	0.13	0.08	11.89	14.26	16.6	4.4	2.3
	Bt1	5-18	11.9	63.7	24.4	0.41	0.49	0.12	0.10	12.25	13.37	8.4	4.7	0.6
	Bt2	18-28	12.5	64.4	23.1	0.61	0.44	0.10	0.09	10.59	11.83	10.5	4.8	0.3
	Bt3	28-40	21.1	62.3	16.6	0.31	0.33	0.10	0.12	8.54	9.40	9.1	4.8	0.1
	Bt4	40-46	26.9	58.3	14.8	0.10	0.26	0.10	0.21	8.19	8.86	7.6	4.9	0.1
	C	46-62	45.7	42.9	11.4	0.10	0.17	0.08	0.16	6.74	7.25	7.0	5.2	0.1
Freest	Ap	0-6	43.2	49.7	7.1	1.57	0.71	0.09	0.05	6.21	8.63	28.0	4.7	2.4
	Bt1	6-21	34.5	40.2	25.3	0.97	0.42	0.09	0.07	9.94	11.49	13.5	4.5	0.4
	Bt2	21-30	45.1	19.2	35.7	1.44	2.31	0.16	0.24	9.44	13.59	30.5	5.0	0.2
	Bt3	30-38	44.4	19.6	36.0	2.67	4.27	0.16	0.42	7.29	14.81	50.8	5.3	0.1
	Bt4	38-46	43.3	19.8	36.9	4.02	6.75	0.16	0.80	4.57	16.30	71.9	5.0	0.1
	Bt5	46-62	37.7	22.9	39.4	5.45	9.40	0.22	1.20	3.98	20.25	80.3	4.9	0.1
Kirkville	Ap	0-5	58.3	34.9	6.8	1.21	0.17	0.07	0.08	5.14	6.67	22.9	4.9	1.5
	Bw1	5-15	57.4	35.5	7.1	0.81	0.23	0.03	0.02	4.60	5.69	19.2	4.9	0.3
	Bw2	15-24	46.4	46.8	6.8	0.91	0.32	0.05	0.03	4.72	6.03	21.7	5.0	0.1
	Bw3	24-33	37.7	55.5	6.8	0.51	0.38	0.05	0.06	4.89	5.89	16.9	5.1	0.1
	Bg1	33-49	29.6	60.5	9.9	0.81	0.47	0.06	0.17	6.97	8.48	17.8	5.3	0.1
	Bg2	49-60	21.6	65.7	12.7	0.10	0.87	0.05	0.59	7.59	9.20	17.5	5.4	0.1
Providence	Ap	0-3	17.7	74.4	7.9	8.17	2.05	0.29	0.06	9.29	19.86	53.2	5.9	6.2
	E	3-9	11.6	79.6	8.8	1.52	0.72	0.17	0.02	4.06	6.49	37.4	5.4	1.2
	Bt1	9-13	8.4	78.2	13.4	0.81	0.90	0.17	0.03	4.54	6.45	29.6	4.9	0.6
	Bt2	13-22	4.7	63.1	32.2	1.44	5.26	0.40	0.09	9.39	16.58	43.4	5.0	0.4
	Btx1	22-28	12.4	65.4	22.2	0.72	4.81	0.26	0.22	7.14	13.15	45.7	5.3	0.1
	2Btx2	28-38	34.8	50.8	14.4	0.30	3.60	0.12	0.35	4.28	8.65	50.5	5.3	0.1
	2Btx3	38-50	38.9	46.9	14.2	0.10	3.34	0.10	0.34	3.92	7.80	49.7	5.4	0.1
	2Btx4	50-62	47.7	35.8	16.5	0.30	3.07	0.07	0.29	3.30	7.03	53.1	5.3	0.1

TABLE 20.--ENGINEERING INDEX TEST DATA

(Tests were performed by the Mississippi State Highway Department. The pedons are typical of the series in the survey area. For a description of the soils and their location, see the section "Soil Series and Their Morphology." LL means liquid limit; PI, plasticity index; MD, maximum dry density; OM, optimum moisture; and NP, nonplastic)

Soil name, horizon, report number, and depth in inches	Classification		Grain-size distribution									LL	PI	Moisture density	
			Percentage passing sieve--					Percentage smaller than--							
	AASHTO	Unified	No. 4	No. 10	No. 40	No. 60	No. 200	.05 mm	.02 mm	.005 mm	.002 mm			MD	OM
												Pct		Lb/ cu ft	Pct
Kirkville fine sandy loam:															
Bw1-------- 5 to 15 (S86-MS-127-2-2)	A-4	ML	100	100	100	98	55	43	27	14	9	---	NP	118.5	11.1
Bw2-------- 15 to 24 (S86-MS-127-2-3)	A-4	ML	100	100	100	98	51	38	24	10	8	---	NP	119.7	11.2
*Bg1-------- 33 to 49 (S86-MS-127-2-5)	A-4	ML-CL	100	100	99	99	80	66	45	16	10	22	5	113.6	13.8
Petal fine sandy loam:															
**Bt1-------- 8 to 18 (S87-MS-127-3-3)	A-6	ML	100	100	99	96	70	58	39	27	24	32	15	113.9	13.3
**Bt2-------- 18 to 26 (S87-MS-127-3-4)	A-6	ML	100	100	99	95	61	46	33	24	22	32	14	116.3	13.5
***2Bt4------- 38 to 48 (S87-MS-127-3-6)	A-7	MH	100	100	100	100	88	74	56	44	40	57	19	96.4	23.9

* The amount passing the No. 200 sieve is more than allowed for the series, but this difference is within the normal error of observation.

** The amount passing the No. 40 sieve is more than allowed for the series, but this difference is within the normal error of observation.

*** The Unified classification of MH is not allowed for the series, but this difference is within the normal error of observation.

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Bruno	Sandy, mixed, thermic Typic Udifluvents
Bude	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Cahaba	Fine-loamy, siliceous, thermic Typic Hapludults
Cascilla	Fine-silty, mixed, thermic Fluventic Dystrochrepts
Columbus	Fine-loamy, siliceous, thermic Aquic Hapludults
Freest	Fine-loamy, siliceous, thermic Aquic Paleudalfs
Jena	Coarse-loamy, siliceous, thermic Fluventic Dystrochrepts
Kirkville	Coarse-loamy, siliceous, thermic Fluvaquentic Dystrochrepts
Kolin	Fine-silty, siliceous, thermic Haplic Glossudalfs
Lorman	Fine, montmorillonitic, thermic Vertic Hapludalfs
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Ora	Fine-loamy, siliceous, thermic Typic Fragiudults
Petal	Fine-loamy, siliceous, thermic Typic Paleudalfs
Prentiss	Coarse-loamy, siliceous, thermic Glossic Fragiudults
Providence	Fine-silty, mixed, thermic Typic Fragiudalfs
Quitman	Fine-loamy, siliceous, thermic Aquic Paleudults
Rosebloom	Fine-silty, mixed, acid, thermic Typic Fluvaquents
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Stough	Coarse-loamy, siliceous, thermic Fragiaquic Paleudults
Trebloc	Fine-silty, siliceous, thermic Typic Paleaquults

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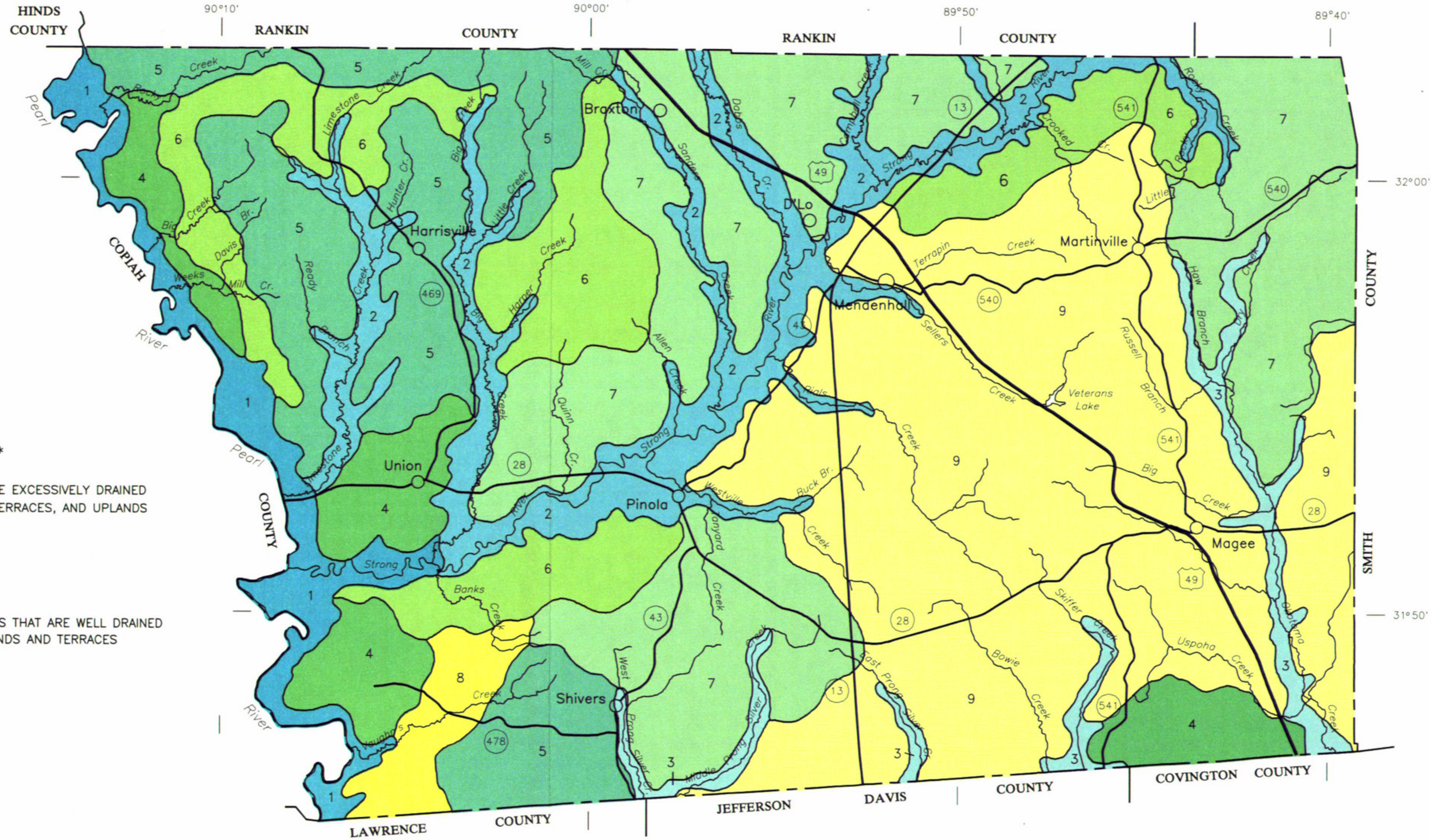


SOIL LEGEND*

DOMINANTLY NEARLY LEVEL SOILS THAT ARE EXCESSIVELY DRAINED TO POORLY DRAINED; ON FLOOD PLAINS, TERRACES, AND UPLANDS

1	Bruno–Jena–Rosebloom
2	Quitman–Jena–Stough
3	Jena–Trebloc–Mantachie

DOMINANTLY NEARLY LEVEL TO STEEP SOILS THAT ARE WELL DRAINED TO SOMEWHAT POORLY DRAINED; ON UPLANDS AND TERRACES

4	Providence–Bude
5	Smithdale–Providence
6	Petal–Smithdale
7	Smithdale–Savannah
8	Lorman–Providence–Freest
9	Smithdale–Ora–Ruston

*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 1995

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
MISSISSIPPI AGRICULTURAL AND FORESTRY EXPERIMENT STATION

GENERAL SOIL MAP

SIMPSON COUNTY, MISSISSIPPI

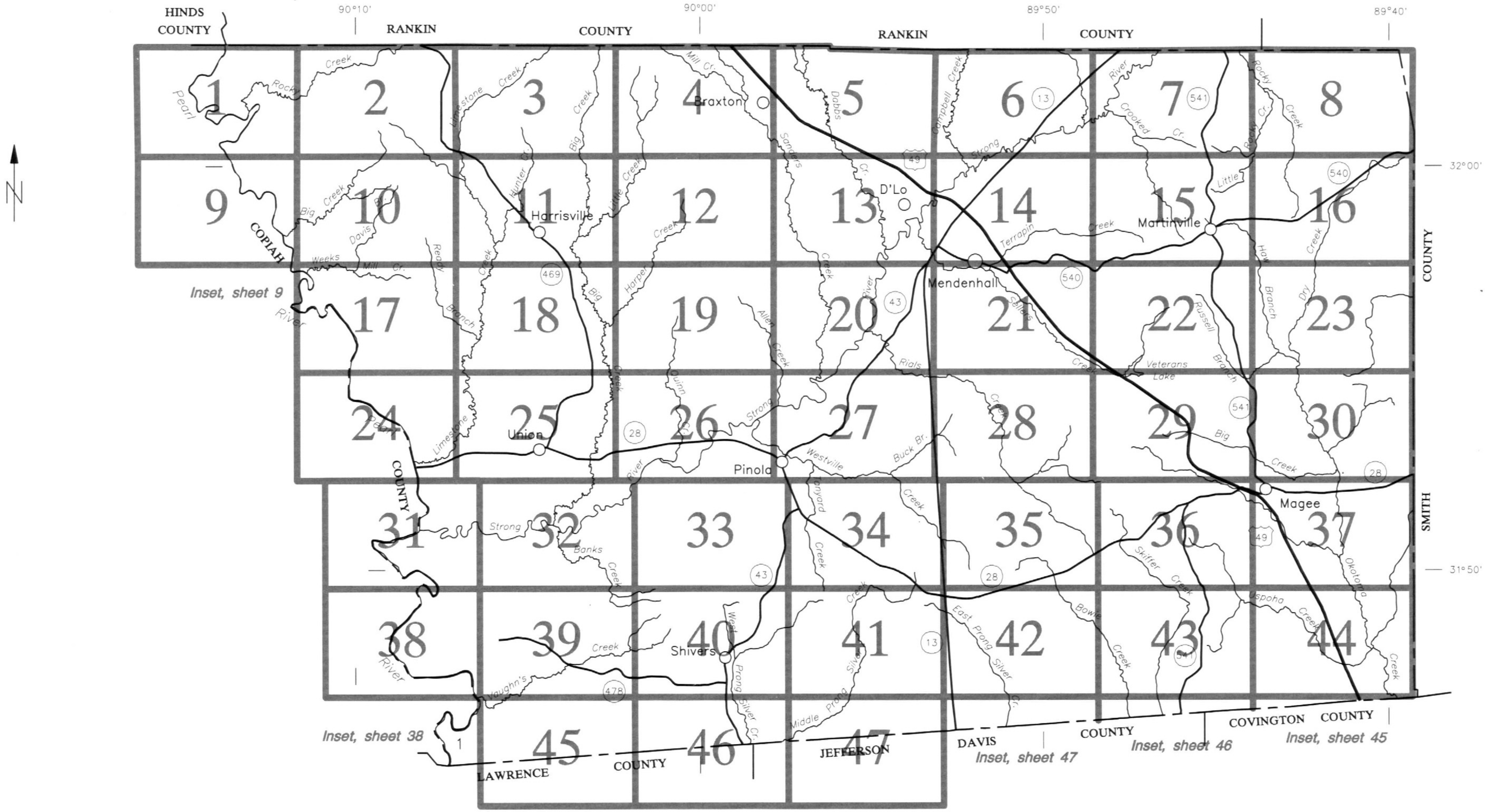
Scale 1:190,080

1 0 1 2 3 4 Miles

1 0 4 8 Km

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

Original text from each individual map sheet read:
This soil survey map was compiled by the U.S. Department of Agriculture, Soil Conservation Service, and cooperating agencies. Base maps are from 1980 -1981 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



INDEX TO MAP SHEETS
SIMPSON COUNTY, MISSISSIPPI

Scale 1:190,080
1 0 1 2 3 4 Miles
1 0 4 8 Km

SOIL LEGEND

Soil map symbols and map unit names are alphabetical. Map symbols are letters or a combination of letters and numbers. The first letter, always a capital, is the initial letter of the soil series name. The second letter is a small letter except in order three map units, in which case it is a capital letter. Order three map units are further indicated by an asterisk. A capital letter that follows a small letter indicates the class of slope. Symbols without a slope letter represent nearly level soils, flooded soils, or miscellaneous areas. A number of 2 following the slope letter indicates the soil is moderately eroded.

SYMBOL	NAME
Br	Bruno loamy sand, frequently flooded
BuA	Bude silt loam, 0 to 2 percent slopes
CoA	Cahaba fine sandy loam, 0 to 2 percent slopes
Cs	Cascilla silt loam, occasionally flooded
CuA	Columbus silt loam, 0 to 2 percent slopes
FrB2	Freest loam, 2 to 5 percent slopes, eroded
FrC2	Freest loam, 5 to 8 percent slopes, eroded
Je	Jena fine sandy loam, occasionally flooded
Kr	Kirkville fine sandy loam, occasionally flooded
KtA	Kolin silt loam, 1 to 3 percent slopes
LoB2	Lorman silt loam, 2 to 5 percent slopes, eroded
LoD2	Lorman silt loam, 5 to 15 percent slopes, eroded
LoF2	Lorman silt loam, 15 to 35 percent slopes, eroded
Ma	Mantachie loam, occasionally flooded
OrB2	Ora loam, 2 to 5 percent slopes, eroded
OrC2	Ora loam, 5 to 8 percent slopes, eroded
PD	Petal and Smithdale soils, 8 to 15 percent slopes*
PE	Petal and Smithdale soils, 15 to 35 percent slopes*
Ph	Pits-Udorthents complex
PmA	Prentiss fine sandy loam, 0 to 2 percent slopes
PrA	Providence silt loam, 0 to 2 percent slopes
PrB2	Providence silt loam, 2 to 5 percent sloes, eroded
PrC2	Providence silt loam, 5 to 8 percent slopes, eroded
QaA	Quitman loam, 0 to 2 percent slopes
QJT	Quitman-Jena-Trebloc association, flooded*
Ro	Rosebloom silt loam, frequently flooded
RuB2	Ruston fine sandy loam, 2 to 5 percent slopes, eroded
RuC2	Ruston fine sandy loam, 5 to 8 percent slopes, eroded
SaB2	Savannah loam, 2 to 5 percent slopes, eroded
SaC2	Savannah loam, 5 to 8 percent slopes, eroded
SdD2	Smithdale fine sandy loam, 8 to 15 percent slopes, eroded
SdF	Smithdale fine sandy loam, 15 to 35 percent slopes
SL	Smithdale sandy loam, 5 to 40 percent slopes*
StA	Stough loam, 0 to 2 percent slopes
Tb	Trebloc silt loam, frequently flooded

* The composition of these units is more variable than that of the others in the survey area, but has been controlled well enough to be interpreted for the expected use of the soils.

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK
1 890 000 FEET

LAND DIVISION CORNER
(sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate
- Federal
- State
- County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE
(normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small (Named where applicable)

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban area) (occupied)
- Church
- School
- Indian mound (label)
- Located object (label)
- Tank (label)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial
- Intermittent

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE (normally not shown)

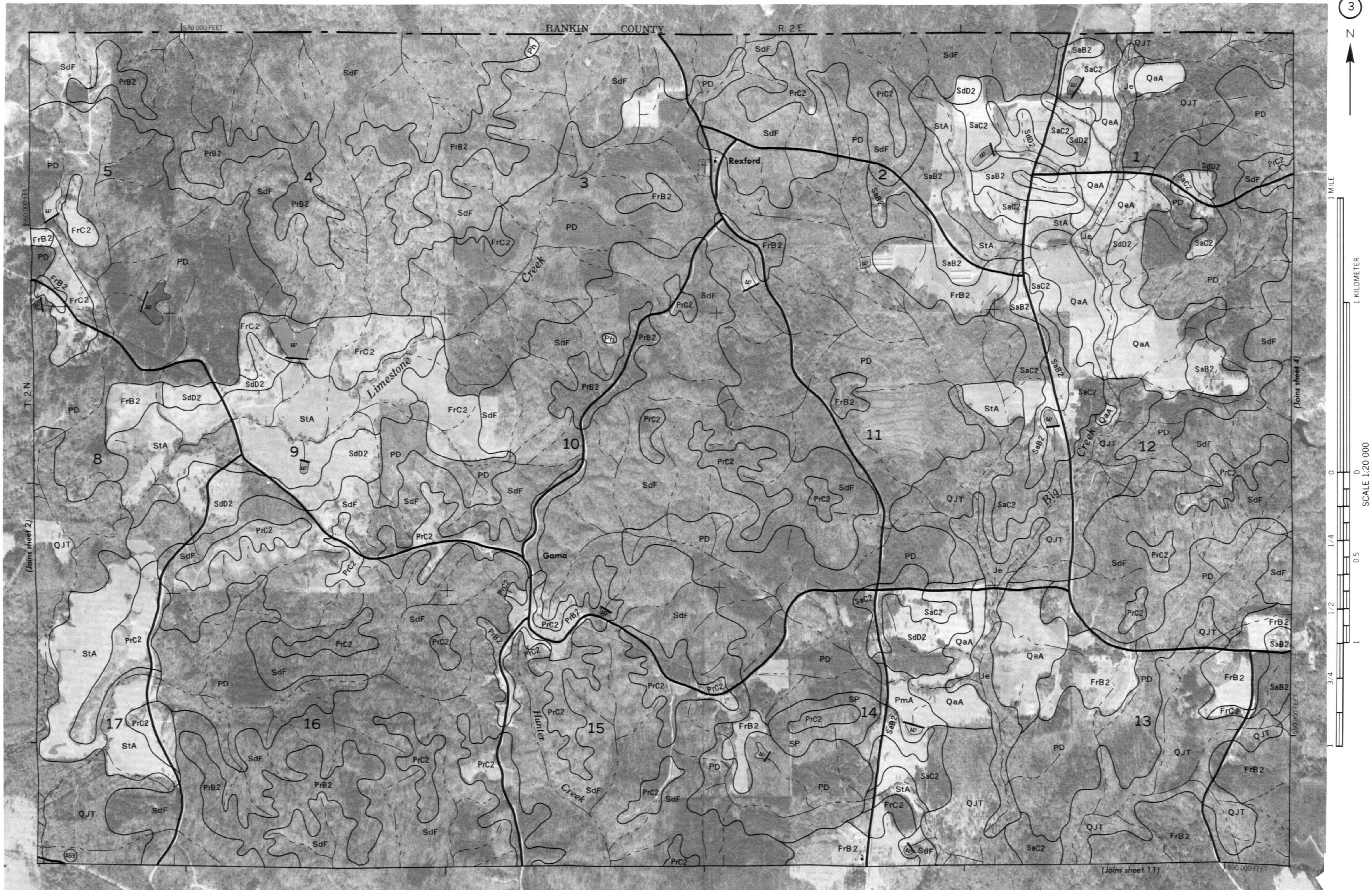
MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

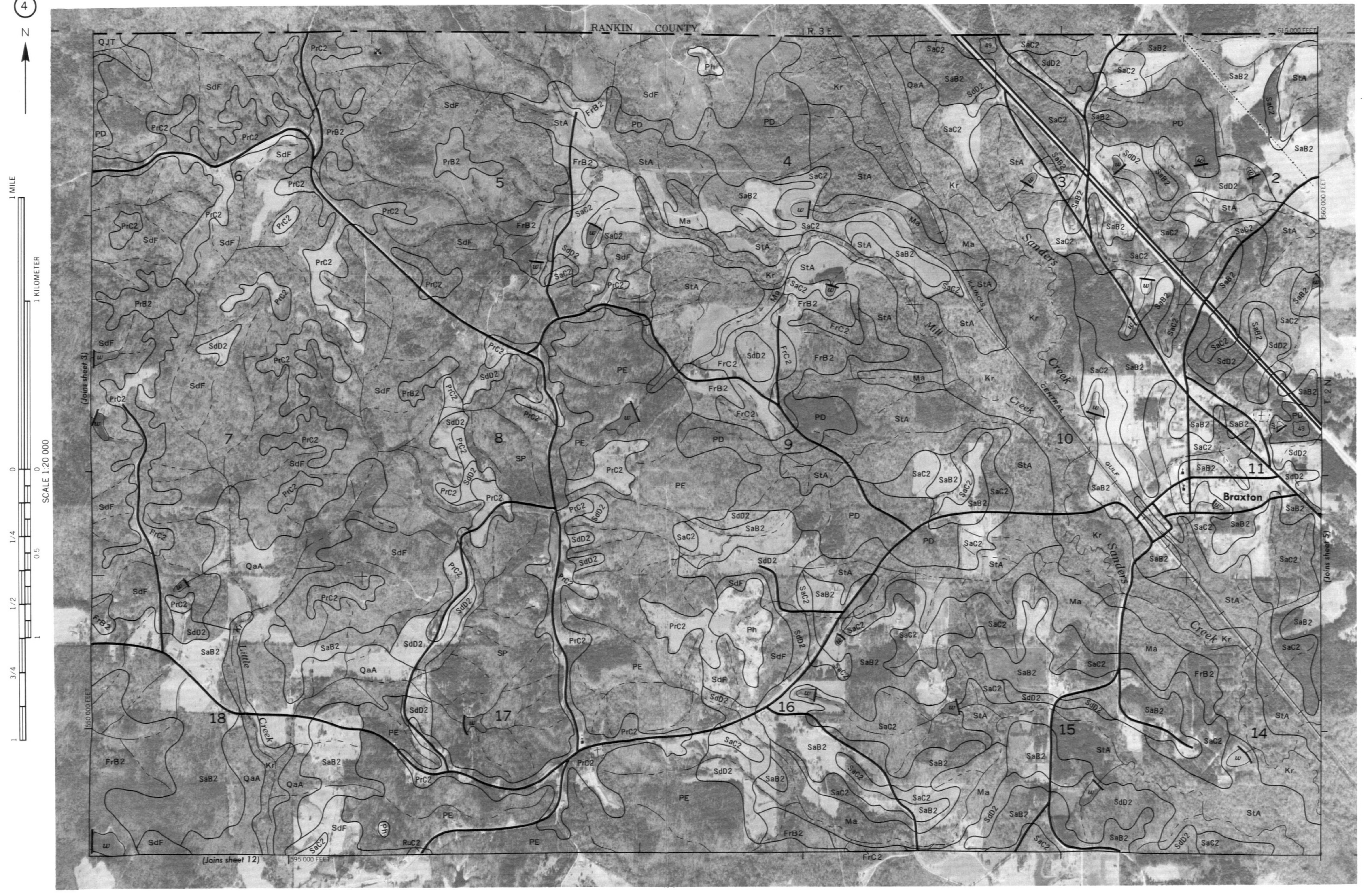
SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 1


2
N
RANKIN COUNTY
R. 1 E.
R. 2 E.
T. 2 N.
(Joins sheet 1)
(Joins sheet 3)
(Joins sheet 10)
Rocky Creek
Limestone Creek
560 000 FEET
1 MILE
1 KILOMETER
SCALE 1:20 000

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 3



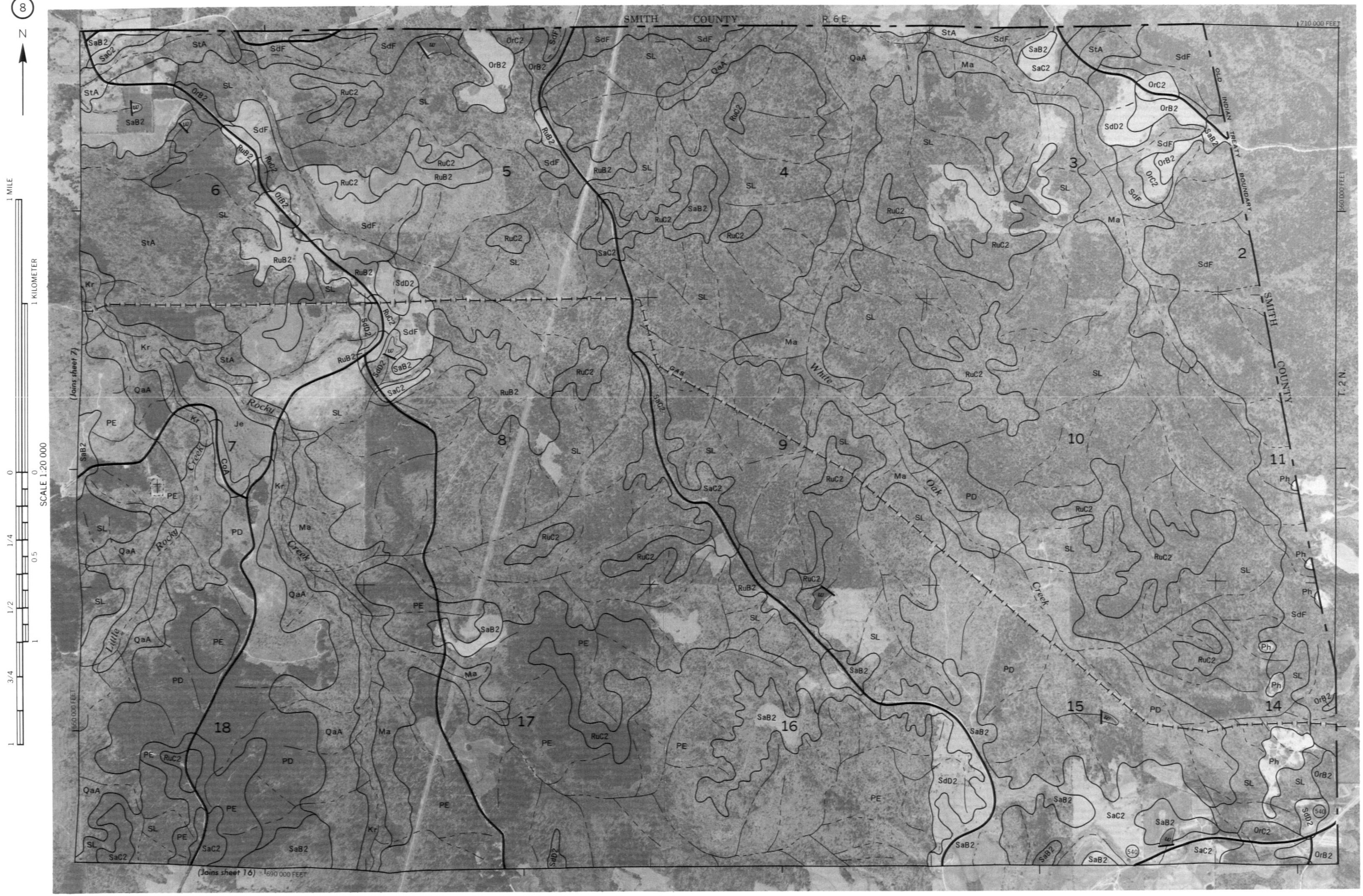
4


N
1 MILE
1 KILOMETER
SCALE 1:20 000
RANKIN COUNTY
R. 3 E.
T. 2 N.
(Joins sheet 3)
(Joins sheet 5)
(Joins sheet 12)
Braxton
Sanders Creek
Mill Creek
Little Creek
ILLINOIS CENTRAL GULF
615 000 FEET
560 000 FEET
595 000 FEET
550 000 FEET


5
N
RANKIN COUNTY
R. 3 E. R. 4 E.
T. 2 N.
615 000 FEET
560 000 FEET
635 000 FEET
(Joins sheet 4)
(Joins sheet 6)
(Joins sheet 13)
Phillips Lake
Dabbs Creek
Indian Creek
Sanders Creek
Pine Lake
ILLINOIS CENTRAL GULF
49
1 MILE
1 KILOMETER
SCALE 1:20 000

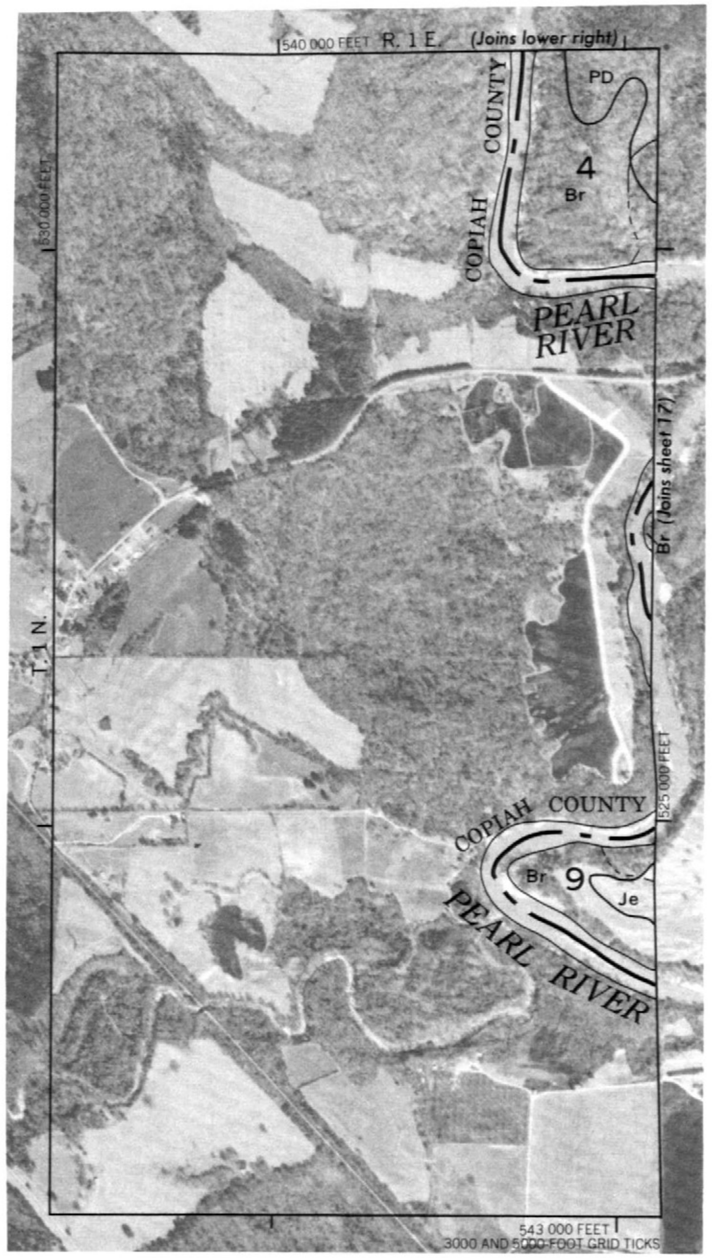

6
N
RANKIN COUNTY
R. 4 E. | R. 5 E.
660 000 FEET
T. 2 N.
(Joins sheet 5)
(Joins sheet 7)
(Joins sheet 14)
640 000 FEET
550 000 FEET
Everett
STRONG RIVER
Campbell Creek
Wildcat Creek
GAS
1 MILE
1 KILOMETER
SCALE 1:20 000


7
N
R. 5 E.
RANKIN COUNTY
T. 2 N.
STRONG RIVER
Fletcher Branch
Crooked Creek
Rocky Creek
Little Rocky Creek
GAS
(Joins sheet 6)
(Joins sheet 8)
(Joins sheet 15)
265 000 FEET
285 000 FEET
1 MILE
1 KILOMETER
SCALE 1:20 000
QaA
QJT
PE
SaB2
SaC2
RuC2
RuB2
SL
PD
Kr
SdF
SdD2
OrB2
OrC2
StA
PmA
FrB2
FrC2
CoA
Je
Ph
Tb


8
N
SMITH COUNTY
R. 6 E.
710 000 FEET
OLD INDIAN TREATY BOUNDARY
SMITH COUNTY
T. 2 N.
560 000 FEET
550 000 FEET
(Joins sheet 7)
(Joins sheet 16)
690 000 FEET
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0
0.5
1
Rocky Creek
Little Rocky Creek
White Oak Creek
GAS
540
1
2
3
4
5
6
7
8
9
10
11
14
15
16
17
18
SaB2
SaC2
StA
SdF
OrC2
OrB2
SL
RuC2
RuB2
QaA
Ma
SdD2
Kr
Je
PE
PD
CoA
Ph
OrB2

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 9

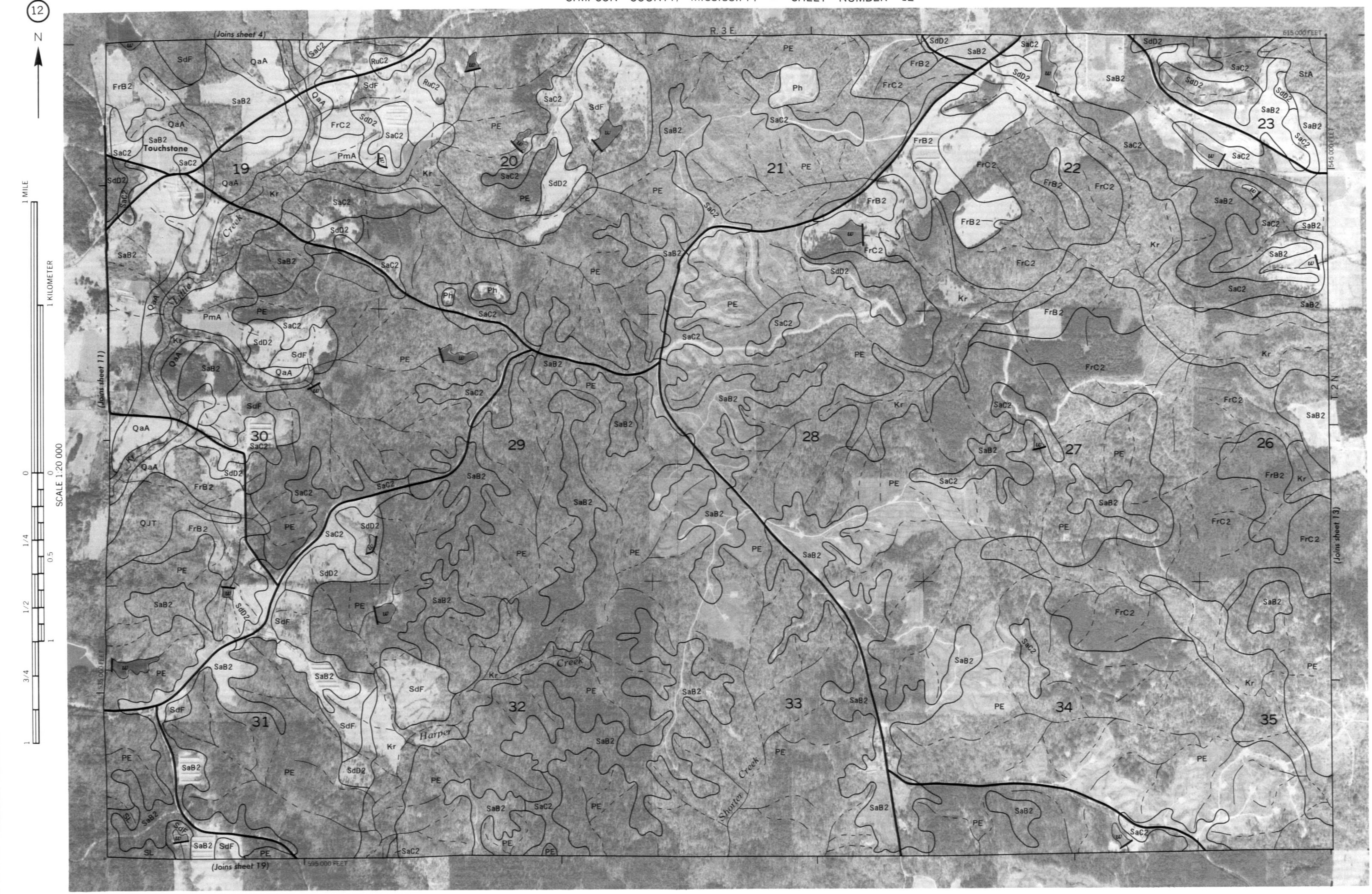
9

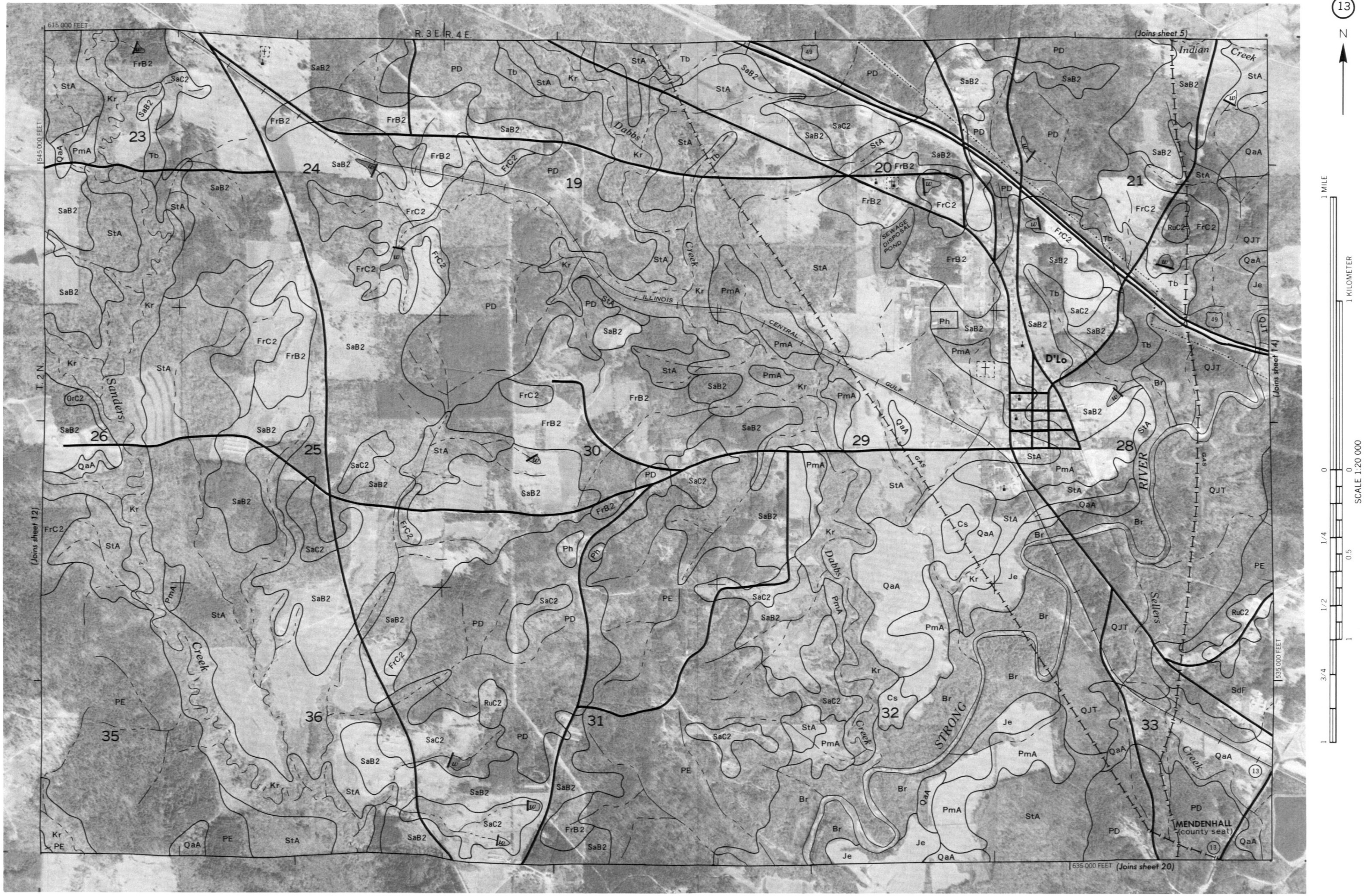


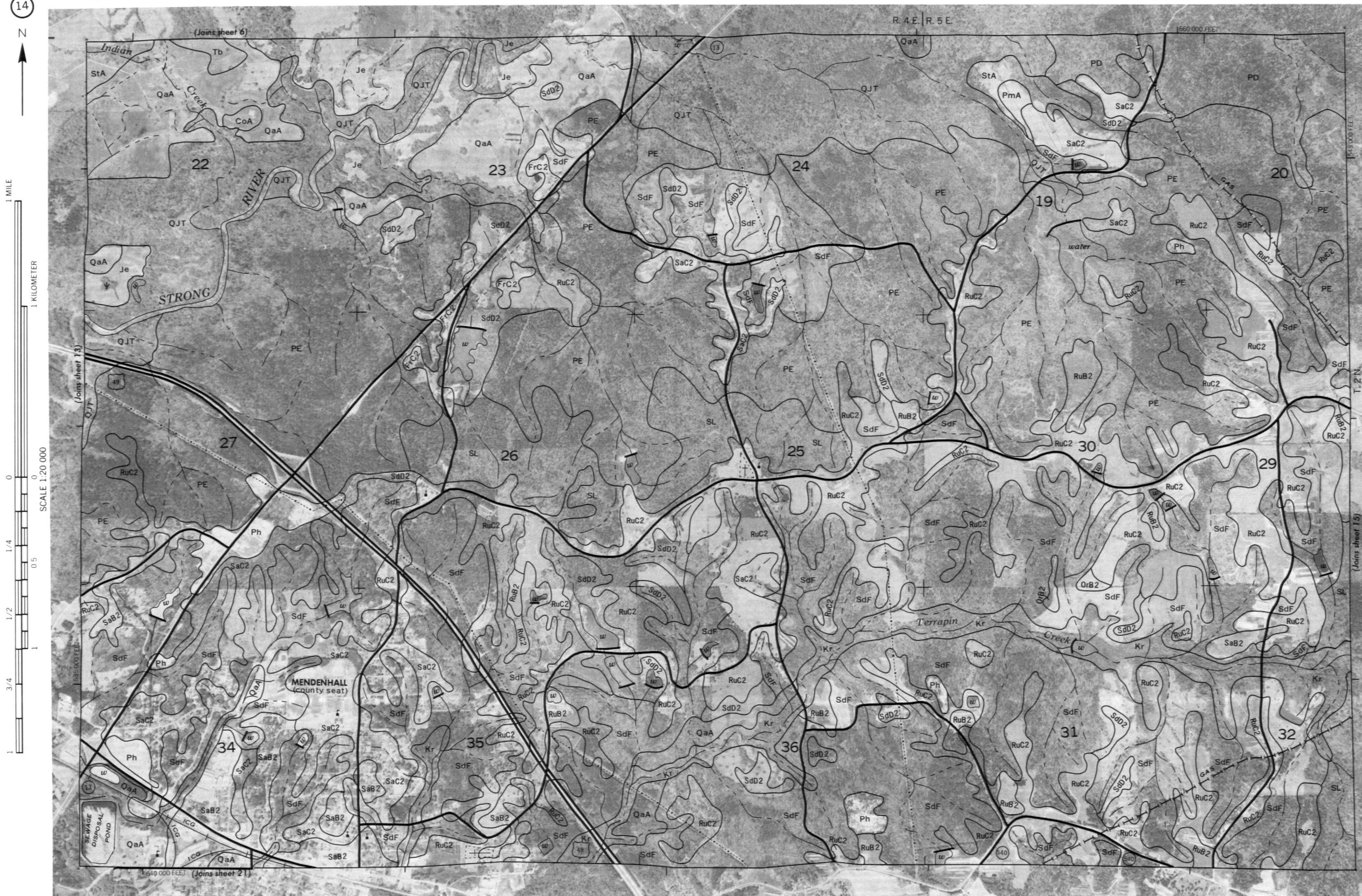
N


10
N
(Joins sheet 2)
(Joins sheet 9)
(Joins sheet 11)
(Joins sheet 17)
R. 1 E. | R. 2 E.
T. 2 N.
565 000 FEET
1 MILE
1 KILOMETER
SCALE 1:20 000
Barron Creek
Creek
Big
Limestone Creek
Branch
Davis
Ready Branch
19
20
22
23
24
25
26
27
29
30
31
32
34
35
36
PD
SdF
SL
StA
PmA
PrB2
PrC2
QJT
QaA
FrC2
FrB2
SdD2
BuA
Ma
Je
Ph
w


11
N
(Joins sheet 3)
(Joins sheet 10)
(Joins sheet 12)
(Joins sheet 18)
R. 2 E.
T. 2 N.
570 000 FEET
590 000 FEET
Harrisville
Limestone Creek
Hunter Creek
Big Creek
Little Creek
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
1 MILE
1 KILOMETER
SCALE 1:20 000
SdF
QJT
SaB2
SaC2
PrB2
PrC2
FrB2
FrC2
QaA
SdD2
Tb
Je
PmA
StA
Kr
PE
PD
Ph
RuB2
SL
w
469


12
N
(Joins sheet 4)
R. 3 E.
615 000 FEET
545 000 FEET
T. 2 N.
(Joins sheet 11)
(Joins sheet 13)
(Joins sheet 19)
595 000 FEET
535 000 FEET
Touchstone
Little Creek
Creek
Harper
Shorter Creek
1 MILE
1 KILOMETER
SCALE 1:20 000
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35

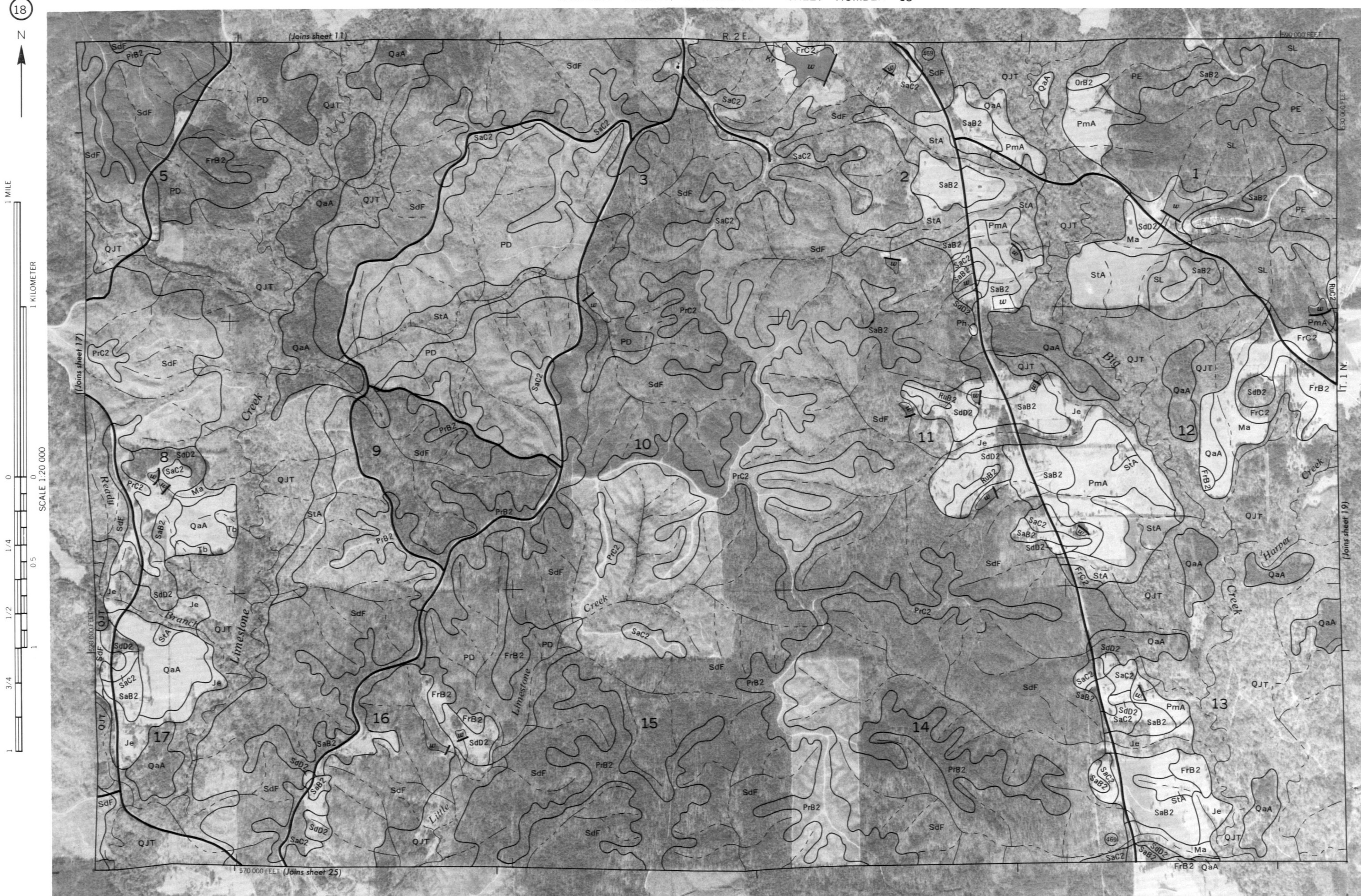

13
N
(Joins sheet 5)
(Joins sheet 12)
(Joins sheet 14)
(Joins sheet 20)
615 000 FEET
545 000 FEET
535 000 FEET
635 000 FEET
R. 3 E. R. 4 E.
T. 2 N.
D'Lo
MENDENHALL
(county seat)
SEWAGE DISPOSAL POND
ILLINOIS CENTRAL GULF
Indian Creek
Dabbs Creek
Sanders Creek
Sellers Creek
STRONG RIVER
GAS
49
13
19
20
21
23
24
25
26
28
29
30
31
32
33
35
36
1 MILE
1 KILOMETER
SCALE 1:20 000

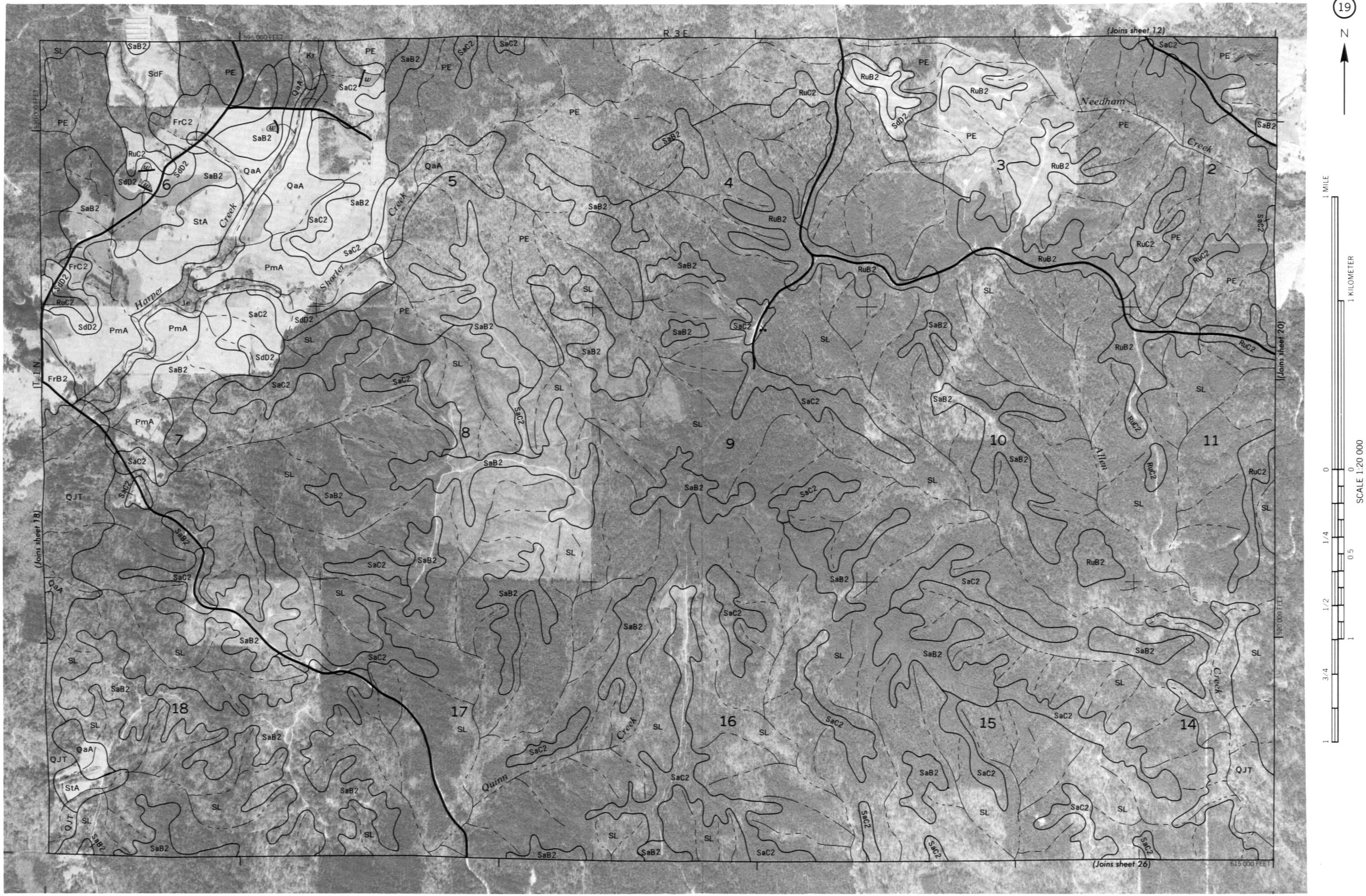

N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0
0.5
1
R. 4 E. | R. 5 E.
T. 2 N.
(Joins sheet 6)
(Joins sheet 13)
(Joins sheet 15)
(Joins sheet 21)
660 000 FEET
640 000 FEET
Indian
Creek
STRONG
RIVER
Terrapin
Creek
MENDENHALL
(county seat)
SEWAGE DISPOSAL POND
water
GAS
ICG
13
49
540
22
23
24
19
20
25
26
27
29
30
31
32
34
35
36
StA
Tb
Je
QaA
QJT
CoA
PE
FrC2
SdF
SdD2
SaC2
RuC2
RuB2
PmA
PD
Ph
SL
SaB2
OrB2
Kr
w

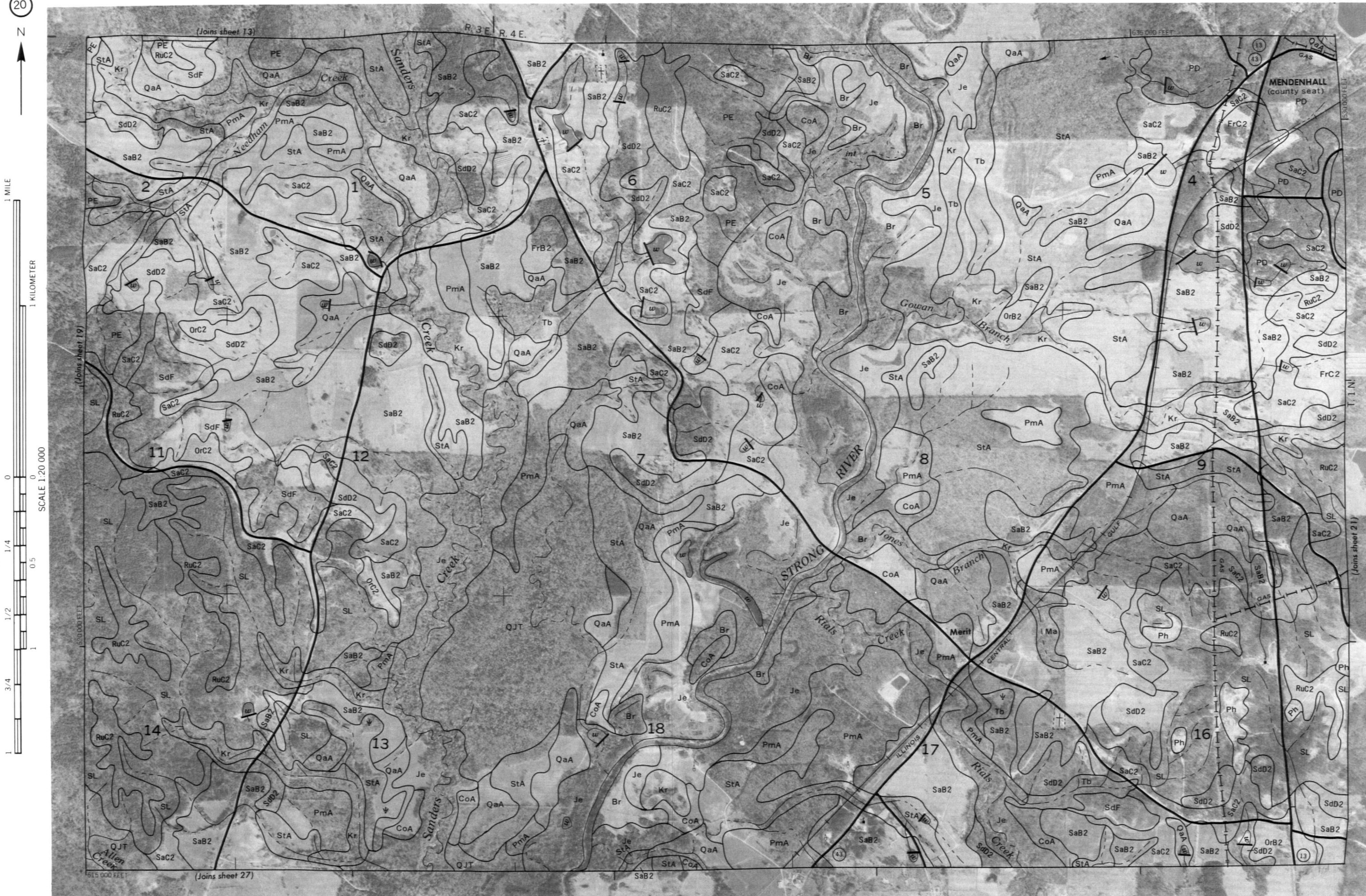

665 000 FEET
R 5 E
(Joins sheet 7)
T 2 N.
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 22)
685 000 FEET
N
Crooked Creek
Cat Branch
Terrapin Creek
Okatoma Creek
Haw Branch
Martinville
GAS
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
540
541
1 MILE
1 KILOMETER
SCALE 1:20 000

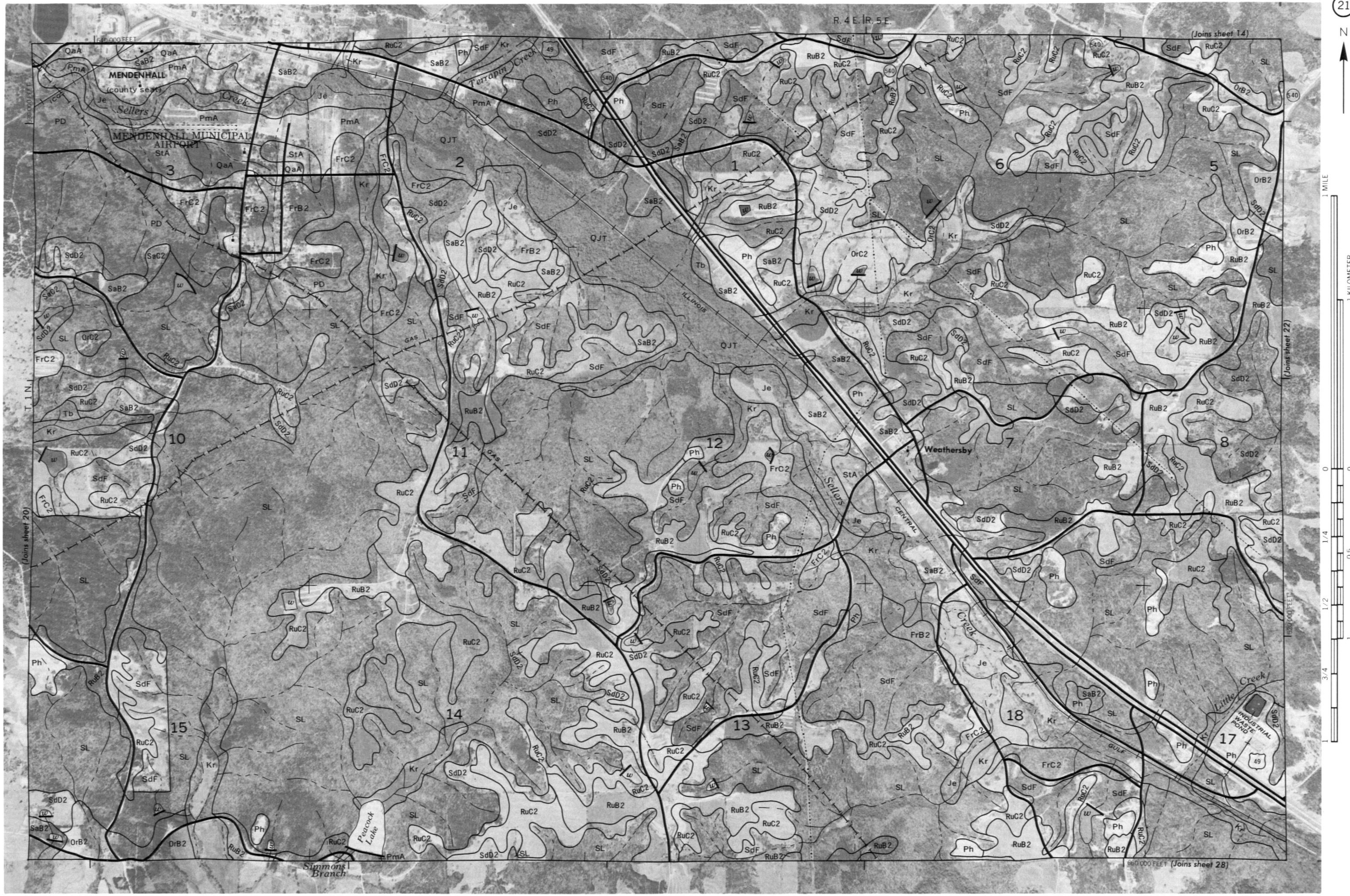

N
(Joins sheet 8)
R. 6 E.
710 000 FEET
545 000 FEET
(Joins sheet 15)
(Joins sheet 23)
690 000 FEET
531 000 FEET
Upton
Rocky
Creek
Dry
Creek
Hatchapaloo
Garner
Mill
Creek
Haw Branch
T. 2 N.
SMITH COUNTY
OLD INDIAN TREATY BOUNDARY
540
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
0.5
1/2
3/4
1


17
N
(Joins sheet 10)
(Joins sheet 18)
(Joins sheet 24)
(Joins inset, sheet 9)
R. 1 E. | R. 2 E.
T. 1 N.
545 000 FEET
565 000 FEET
PEARL RIVER
COPIAH COUNTY
Davis Branch
Mill Creek
Weeks
Reedy Branch
Boston Branch
1 MILE
1 KILOMETER
SCALE 1:20 000


18
N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5
(Joins sheet 11)
R. 2 E.
590 000 FEET
530 000 FEET
T. 1 N.
(Joins sheet 17)
(Joins sheet 19)
(Joins sheet 25)
520 000 FEET
570 000 FEET
469
Big Creek
Harper Creek
Limestone Creek
Little Limestone Creek
Ready Branch
SdF
PrB2
PD
QJT
QaA
FrB2
FrC2
SaC2
SaB2
StA
PmA
OrB2
PE
SL
SdD2
Ma
RuC2
PmA
PrC2
RuB2
Je
Ph
Tb
w
1
2
3
5
8
9
10
11
12
13
14
15
16
17

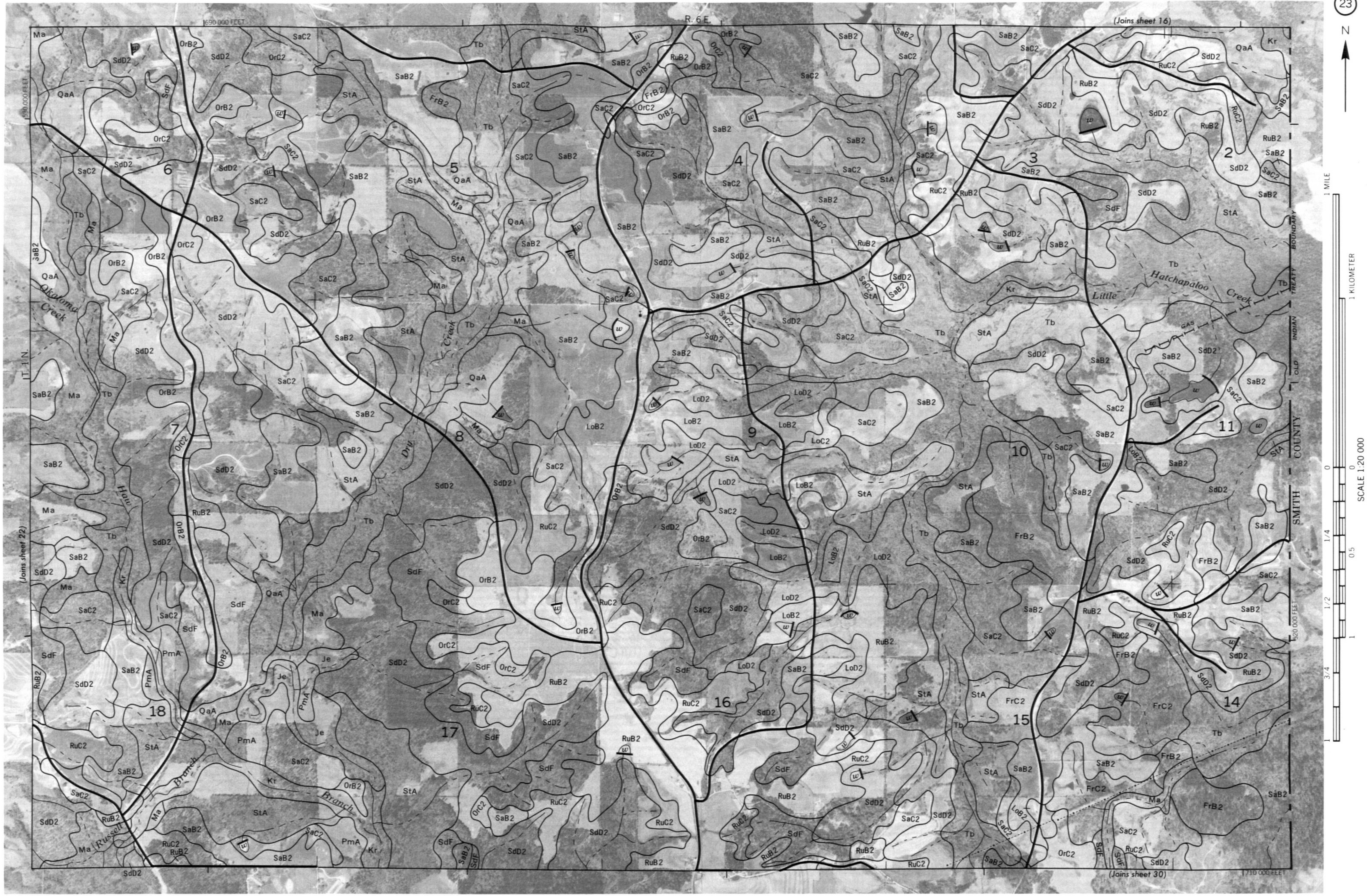

19
N
(Joins sheet 12)
(Joins sheet 18)
(Joins sheet 20)
(Joins sheet 26)
R 3 E
T 1 N
595 000 FEET
615 000 FEET
520 000 FEET
Needham Creek
Harper Creek
Shorter Creek
Allen Creek
Quinn Creek
1 MILE
1 KILOMETER
SCALE 1:20 000


N
1 MILE
1 KILOMETER
SCALE 1:20 000
(Joins sheet 13)
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 27)
R. 3 E.
R. 4 E.
T. 1 N.
MENDENHALL
(county seat)
Merit
STRONG RIVER
Needham Creek
Sanders Creek
Gowan Branch
Jones Branch
Rials Creek
Allen Creek
Je Creek
ILLINOIS CENTRAL GULF
GAS
635 000 FEET
530 000 FEET
620 000 FEET
615 000 FEET


21
N
R. 4 E. R. 5 E.
(Joins sheet 14)
(Joins sheet 20)
(Joins sheet 22)
(Joins sheet 28)
T. 1 N.
MENDENHALL
(county seat)
MENDENHALL MUNICIPAL AIRPORT
Weathersby
Terrapin Creek
Sellers Creek
Little Creek
Simmons Branch
Peacock Lake
INDUSTRIAL WASTE POND
ILLINOIS CENTRAL GULF
GAS
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5
1
540 000 FEET
860 000 FEET

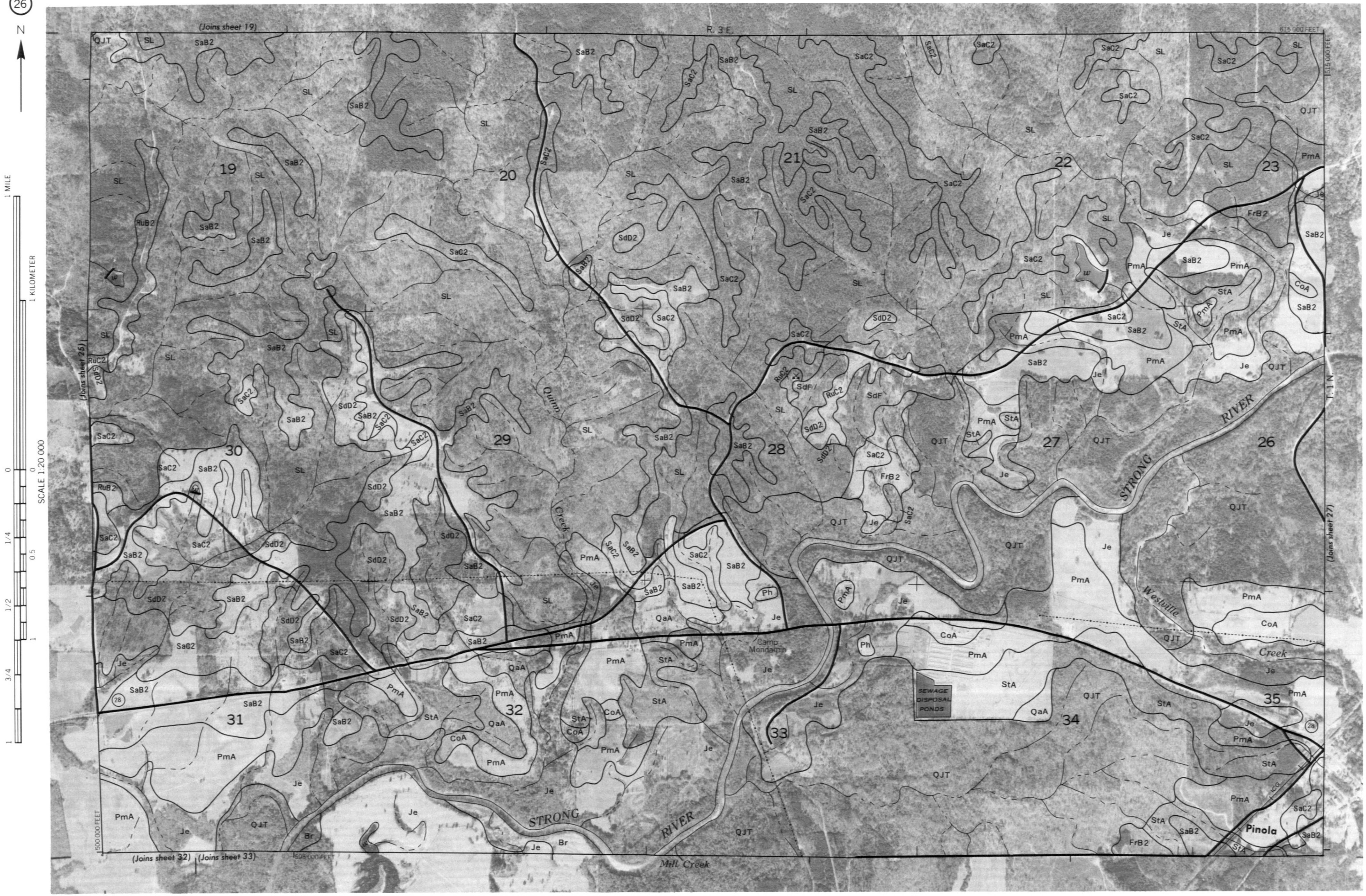

N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5
(Joins sheet 15)
(Joins sheet 21)
(Joins sheet 23)
(Joins sheet 29)
R. 5 E.
T. 1 N.
685 000 FEET
655 000 FEET
130 000 FEET
120 000 FEET
Okatoma Creek
Little Creek
Russell Branch
Veterans Lake
ICG
Kr
540
541
49
1
2
3
4
5
8
9
10
11
12
13
14
15
16
17
SL
OrB2
OrC2
SdD2
SdF
SaB2
SaC2
Ma
QaA
RuB2
RuC2
Ph
w

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 23




N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0
0.5
1
(Joins sheet 17)
(Joins sheet 25)
(Joins sheet 31)
R. 1 E. R. 2 E.
T. 1 N.
565 000 FEET
545 000 FEET
PEARL RIVER
COPIAH COUNTY
Boston Branch
Limestone Creek
intermittent

25
N
(Joins sheet 18)
570 000 FEET
R. 2 E.
T. 1 N.
(Joins sheet 24)
(Joins sheet 26)
(Joins sheet 31)
(Joins sheet 32)
590 000 FEET
500 000 FEET
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
Little Limestone Creek
Limestone Creek
Cottonseed Branch
Branch
Durden Branch
Big Creek
Union
469
28
SdF
PrB2
PrC2
QJT
PmA
Je
PD
StA
BuA
PrA
QaA
SaB2
SaC2
SdD2
FrB2
RuB2
RuC2
SL
Ma
w
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5

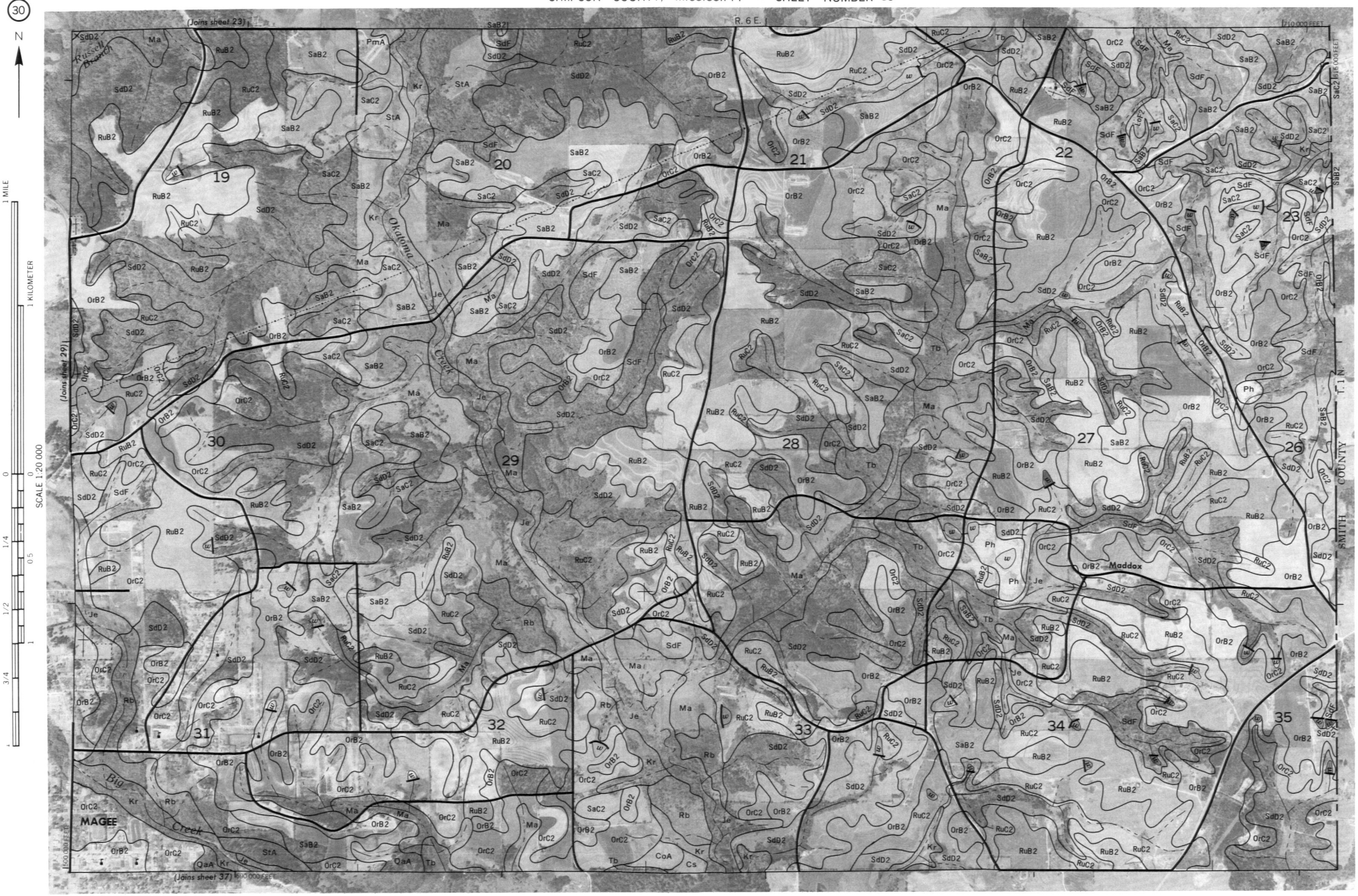

N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0
0.5
1
(Joins sheet 19)
R. 3 E.
615 000 FEET
(Joins sheet 25)
(Joins sheet 27)
T. 1 N.
(Joins sheet 32)
(Joins sheet 33)
500 000 FEET
595 000 FEET
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35
STRONG RIVER
STRONG RIVER
Quinn Creek
Westville Creek
Mill Creek
Camp Mondamin
SEWAGE DISPOSAL PONDS
Pinola
28
QJT
SL
SaB2
SaC2
SdD2
SdF
RuB2
RuC2
FrB2
PmA
Je
StA
CoA
QaA
Ph
Br
w


27
N
(Joins sheet 20)
(Joins sheet 26)
(Joins sheet 28)
(Joins sheet 33)
(Joins sheet 34)
R. 3 E.
R. 4 E.
T. 1 N.
615 000 FEET
635 000 FEET
STRONG RIVER
Sanders Creek
Allen Creek
Smith Branch
Harrigan Branch
Rials Creek
Westville Creek
Buck Branch
Boggan Br.
ILLINOIS CENTRAL GULF
GAS
Pinola
19
20
21
23
24
25
26
28
29
30
31
32
33
35
36
1 MILE
1 KILOMETER
SCALE 1:20 000


28
N
(Joins sheet 21)
R. 4 E. | R. 5 E.
660 000 FEET
(Joins sheet 27)
(Joins sheet 29)
(Joins sheet 34)
(Joins sheet 35)
640 000 FEET
T. 1 N.
1 MILE
1 KILOMETER
SCALE 1:20 000
Rials Creek
Simmons Branch
Buck Branch
Beaver
Branch
19
20
22
23
24
25
26
27
29
30
31
32
34
35
36

29

(Joins sheet 22)
(Joins sheet 30)
(Joins sheet 28)
(Joins 35) (Joins sheet 36)
R. 5 E.
T. 1 N.
665 000 FEET
Veterans Lake
Sellers Creek
Russell Branch
Big Creek
Sanatorium
STATE SANATORIUM
SEWAGE DISPOSAL
ILLINOIS
CENTRAL
GULF
GAS
MAGEE
49
541
545
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36
N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5


30
N
(Joins sheet 23)
R. 6 E.
(Joins sheet 29)
(Joins sheet 37)
T. 1 N.
SMITH COUNTY
MAGEE
Maddox
Okatoma Creek
Russell Branch
Big Creek
1 MILE
1 KILOMETER
SCALE 1:20 000
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35

31

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 31

1 MILE

1 KILOMETER

0 1/4 1/2 3/4 1

0 0.5 1

SCALE 1:20 000

32

N

1 MILE

1 KILOMETER

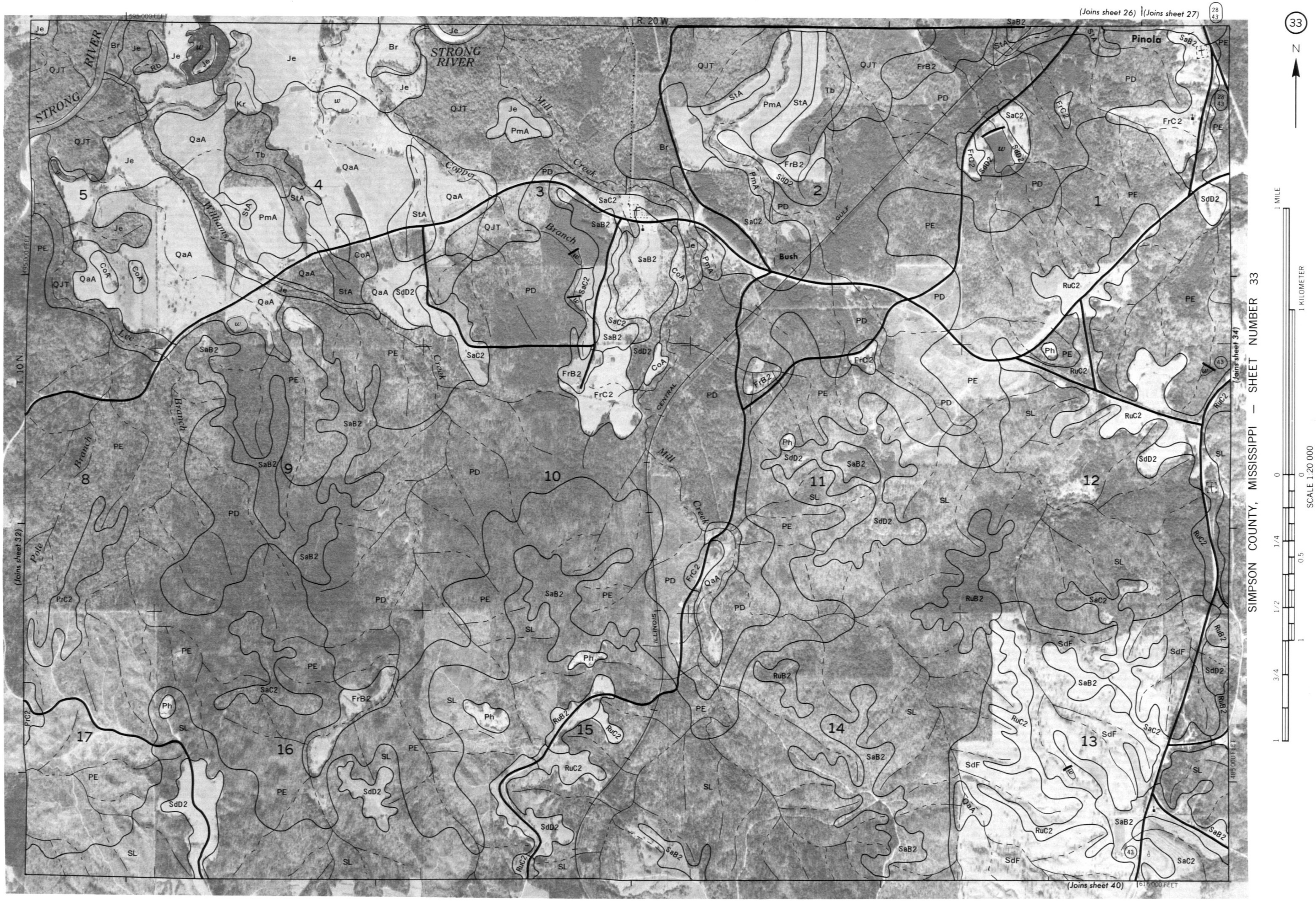
SCALE 1:20 000

0 1/4 1/2 3/4 1

0 0.5 1

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 32

R. 21 W. | R. 20 W.


(Joins sheet 26)
(Joins sheet 27)
33
SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 33
(Joins sheet 32)
(Joins sheet 34)
(Joins sheet 40)
R. 20 W.
T. 10 N.
595 000 FEET
615 000 FEET
STRONG RIVER
Pinola
Bush
Mill Creek
Copper Branch
Williams Creek
Lee Creek
Pole Branch
ILLINOIS CENTRAL GULF
N
1 MILE
1 KILOMETER
SCALE 1:20 000

N

1 MILE

1 KILOMETER

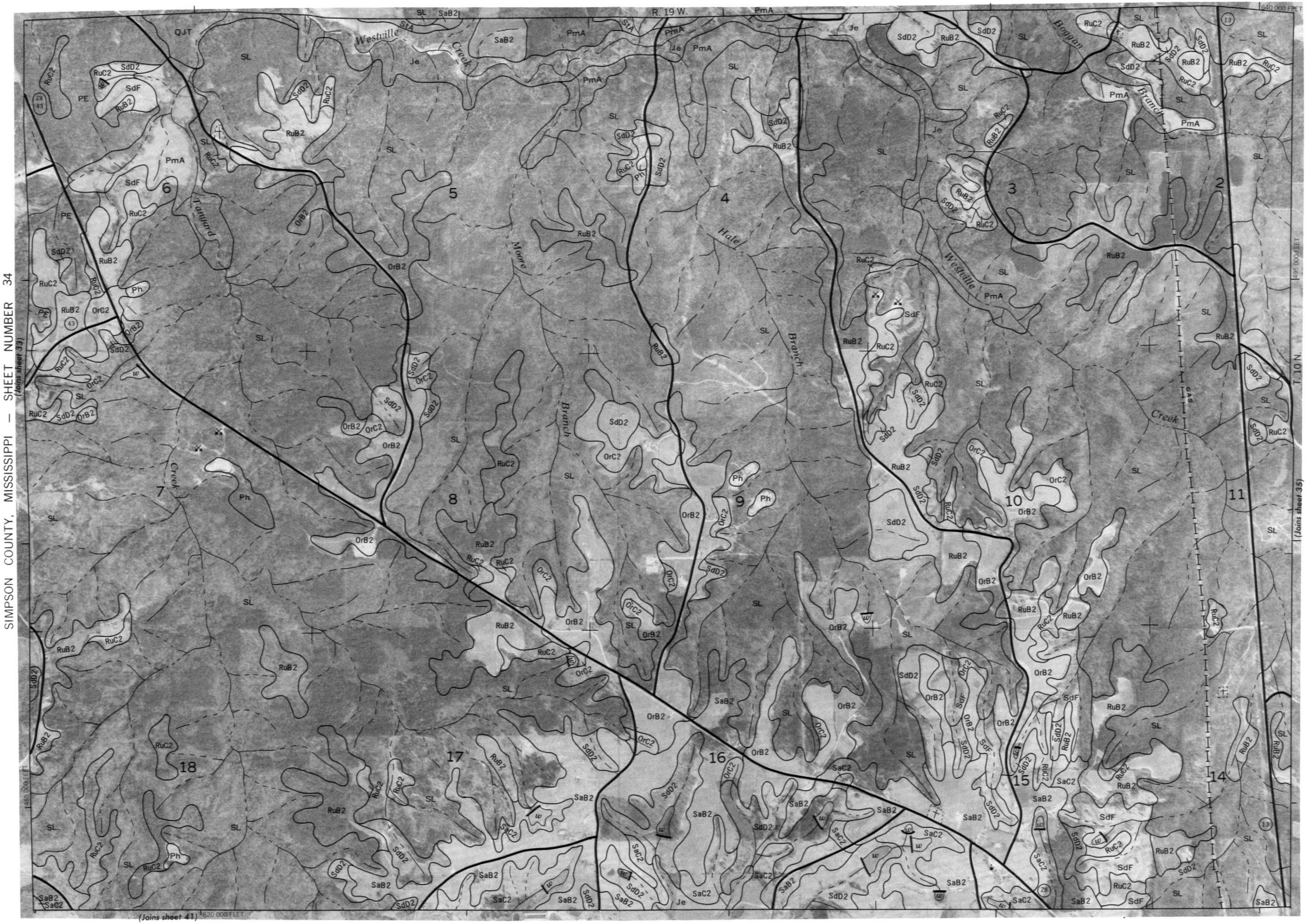
SCALE 1:20 000

0 1/4 1/2 3/4 1

0 0.5 1

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 34

(Joins sheet 27) | (Joins sheet 28)



(Joins sheet 33)

(Joins sheet 35)

(Joins sheet 41)

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 35

(35)

1 MILE

1 KILOMETER

SCALE 1:20 000

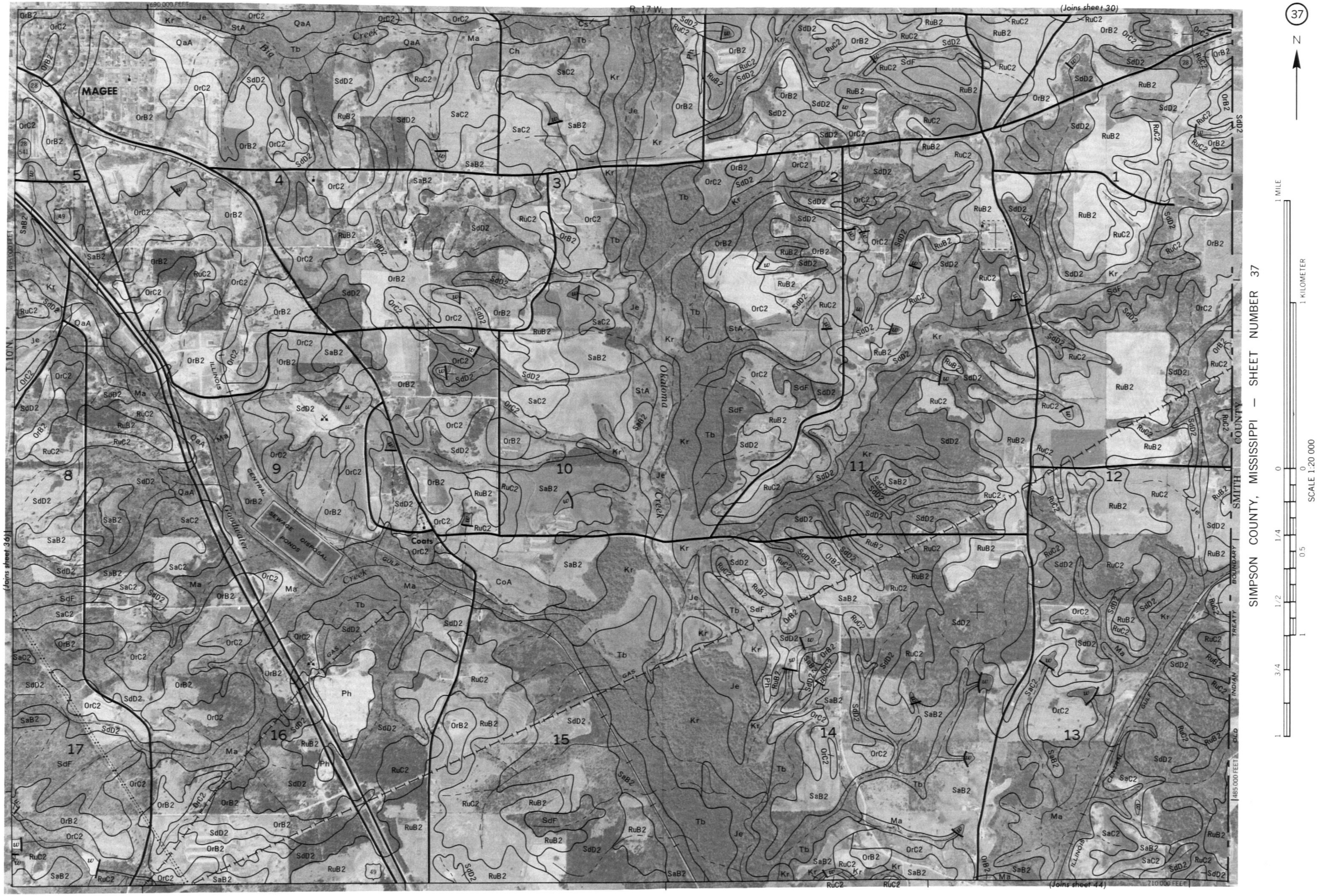
SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 36

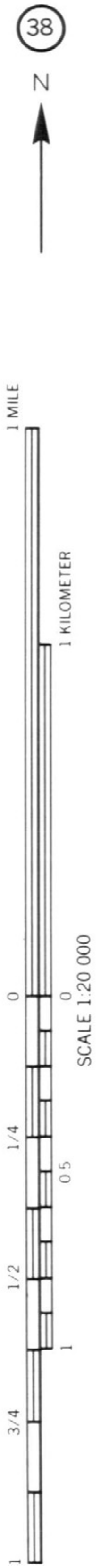
(Joins sheet 35)

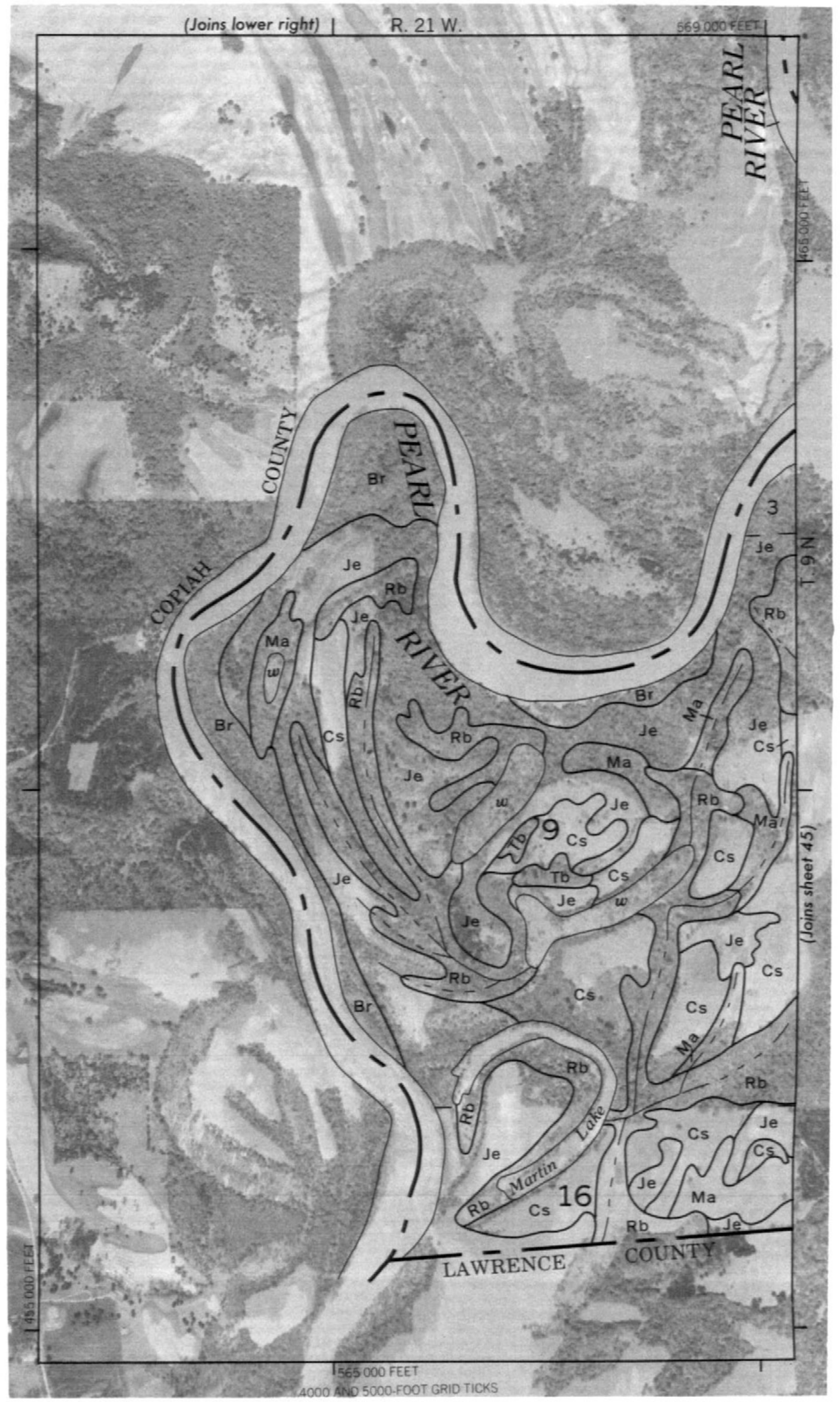
SCALE 1:20 000

1 MILE

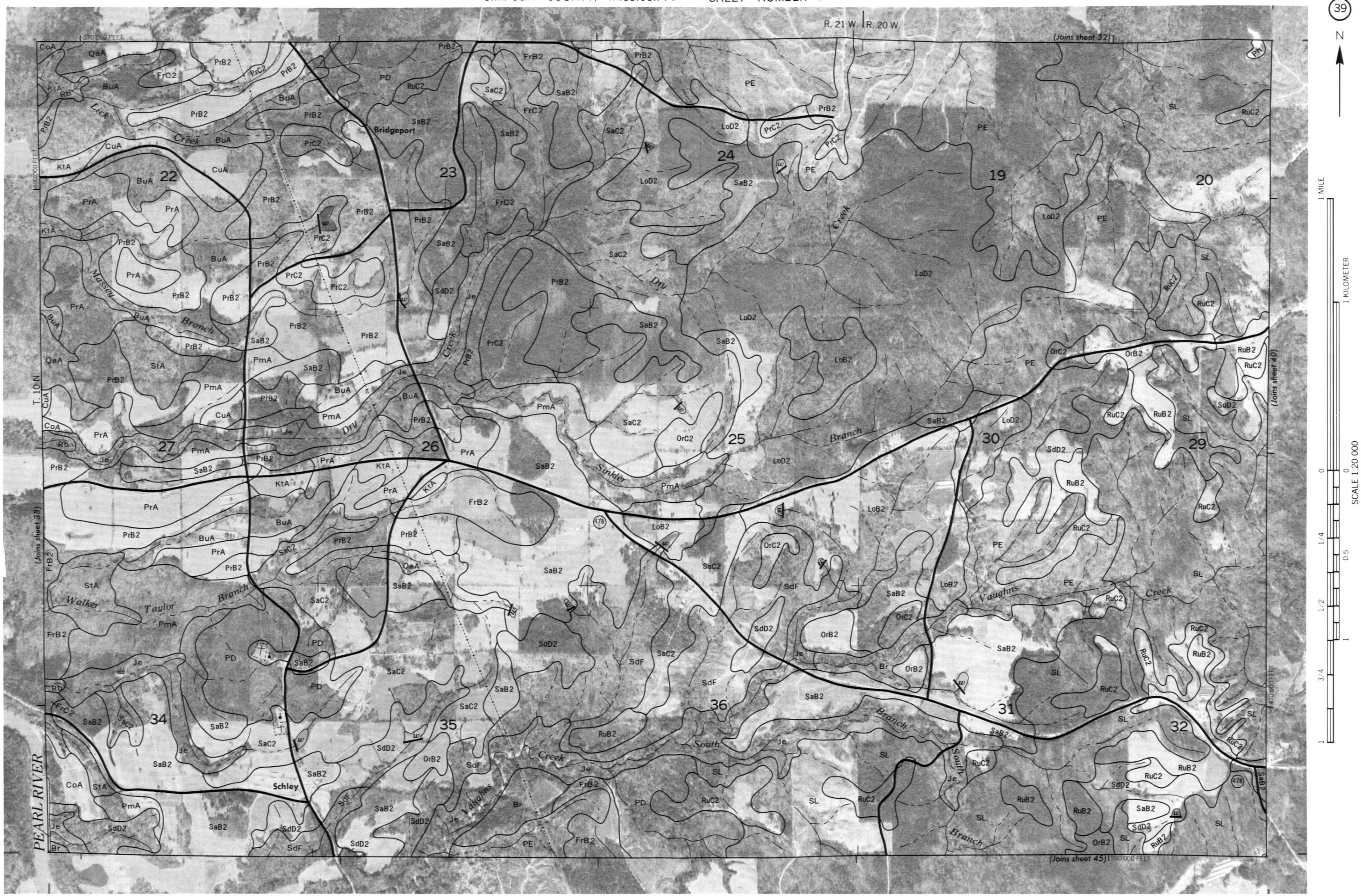
1 KILOMETER


37
N
(Joins sheet 30)
(Joins sheet 44)
(Joins sheet 36)
R. 17 W.
T. 10 N.
690 000 FEET
710 000 FEET
485 000 FEET
495 000 FEET
MAGEE
Coats
Big Creek
Okatoma Creek
Goodwater Creek
ILLINOIS CENTRAL GULF
SEWAGE DISPOSAL PONDS
GAS
SMITH COUNTY
OLD INDIAN TREATY BOUNDARY
SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 37
1 MILE
1 KILOMETER
SCALE 1:20 000

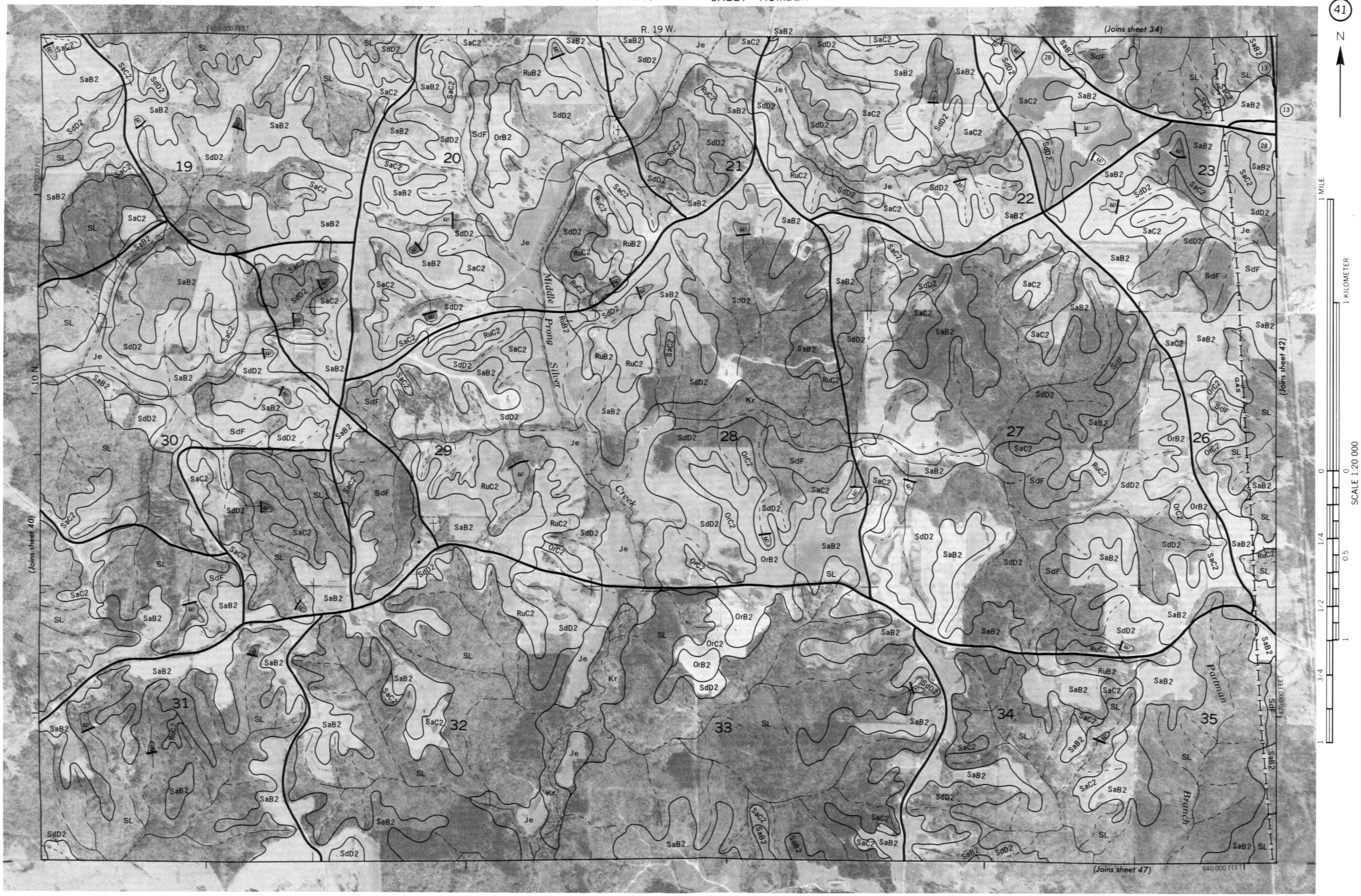

38
N
1 MILE
3/4
1/2
1/4
0
1 KILOMETER
0.5
0
SCALE 1:20 000


(Joins lower right)
R. 21 W.
569 000 FEET
PEARL RIVER
COPIAH
COUNTY
PEARL
RIVER
T. 9 N.
(Joins sheet 45)
Martin
Lake
LAWRENCE
COUNTY
565 000 FEET
4000 AND 5000-FOOT GRID TICKS

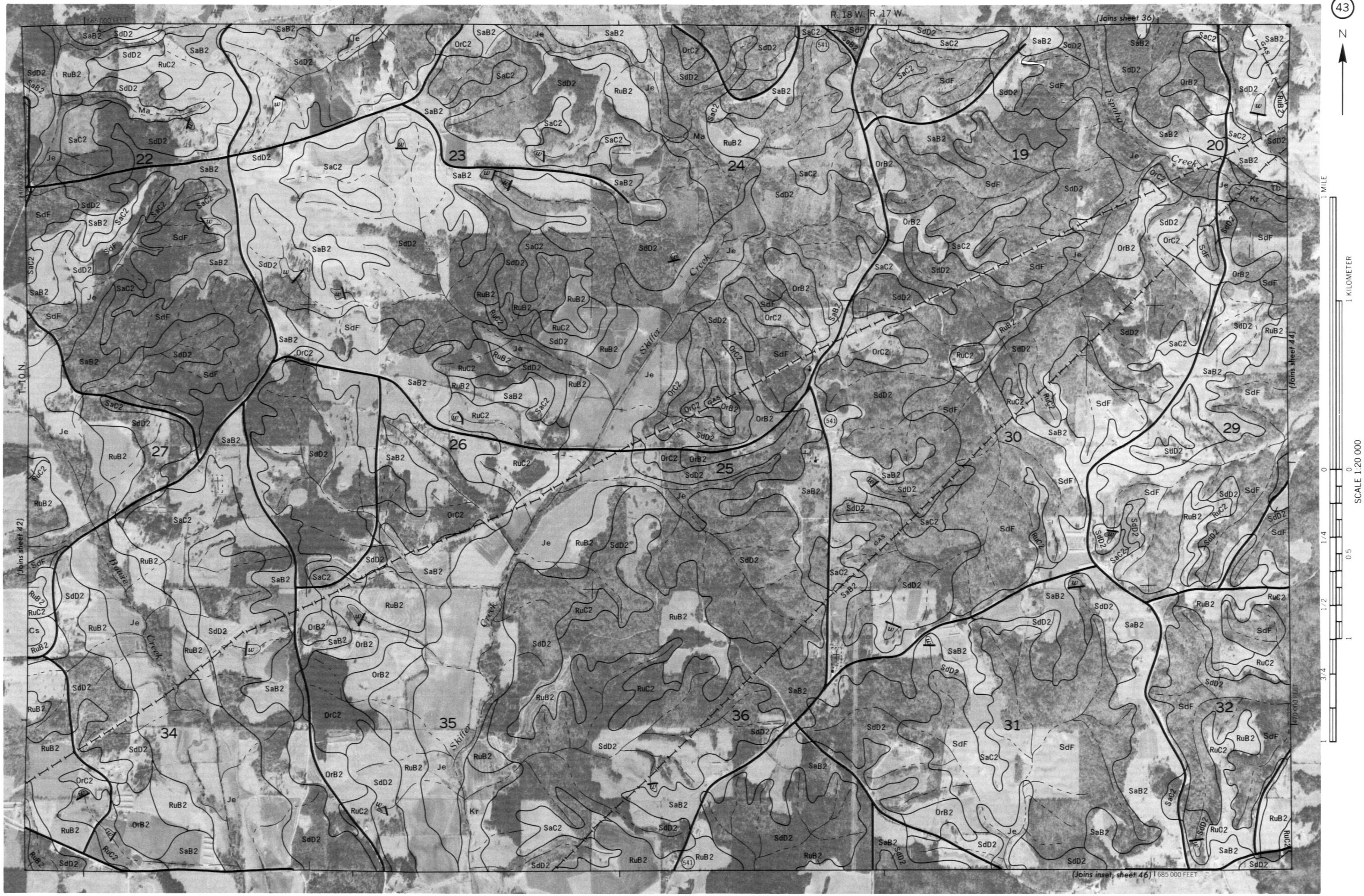

(Joins sheet 31)
R. 21 W.
565 000 FEET
Lick
Creek
Massey
Branch
COPIAH
COUNTY
PEARL
RIVER
T. 10 N.
water
Dry
Creek
(Joins sheet 39)
Taylor
Branch
Walker
COPIAH
COUNTY
(Joins upper left)
560 000 FEET

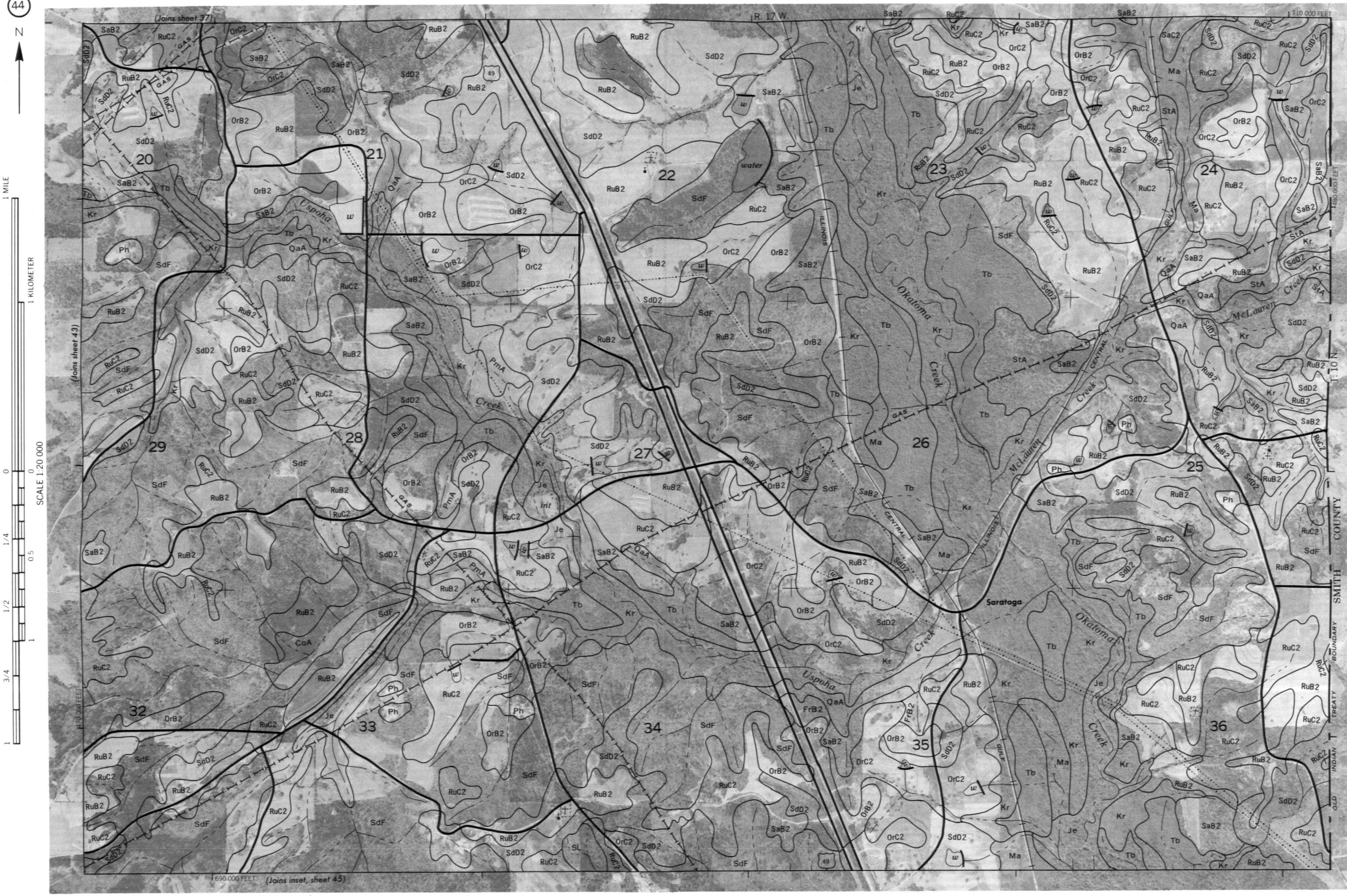

39
N
R. 21 W. R. 20 W.
(Joins sheet 32)
(Joins sheet 38)
(Joins sheet 40)
(Joins sheet 45)
590 000 FEET
T. 10 N.
Bridgeport
Schley
PEARL RIVER
Lick Creek
Massey Branch
Dry Creek
Sinkler Branch
Walker Taylor Branch
South Branch
Vaughns Creek
478
22
23
24
19
20
27
26
25
30
29
34
35
36
31
32
1 MILE
1 KILOMETER
SCALE 1:20 000

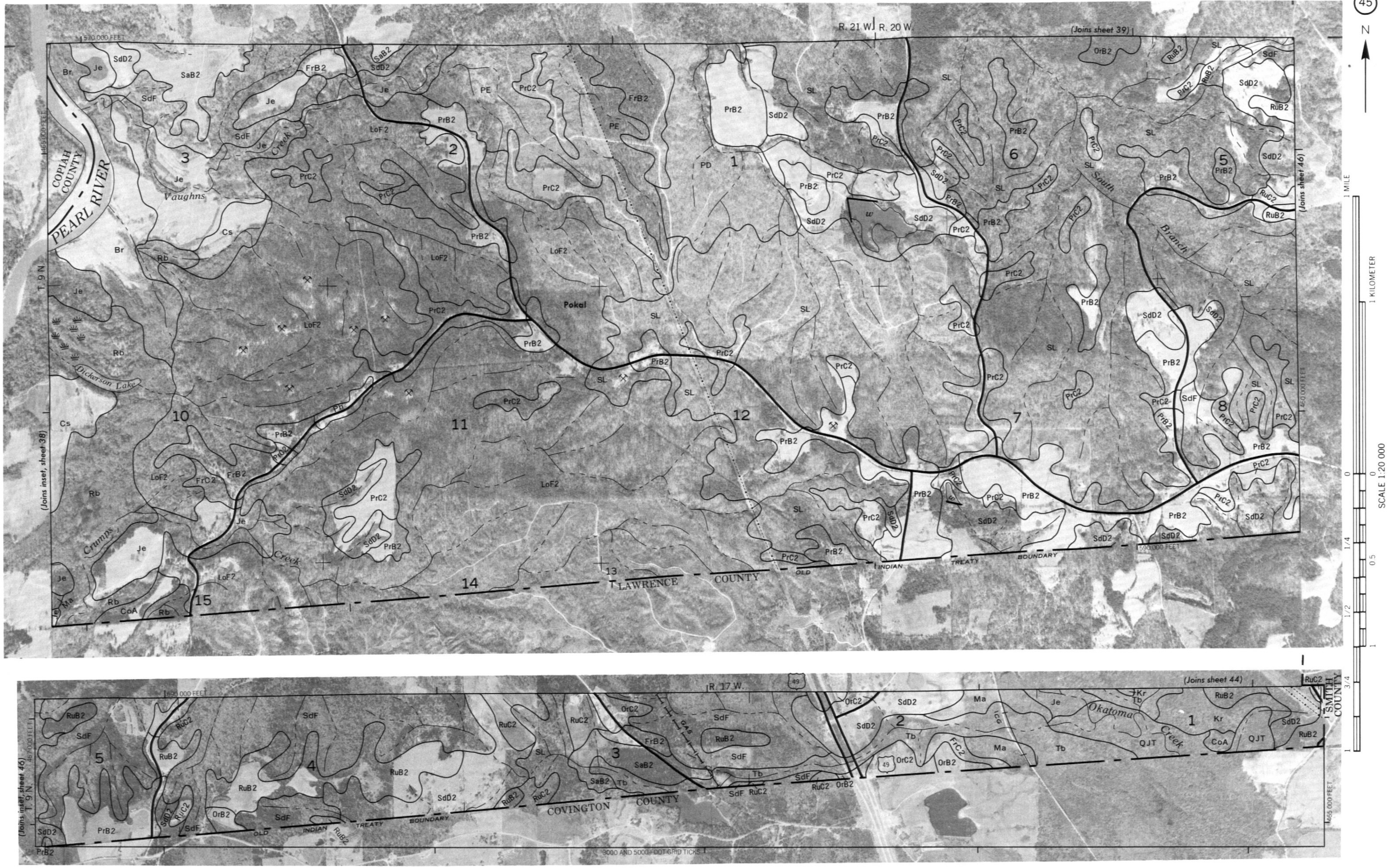

N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5
(Joins sheet 33)
R. 20 W.
615 000 FEET
480 000 FEET
T. 10 N.
(Joins sheet 41)
(Joins sheet 39)
(Joins sheet 46)
595 000 FEET
470 000 FEET
Vaughns
Creek
Silver
Creek
West
Prong
ILLINOIS
CENTRAL
GULF
Shivers
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36


41
N
R. 19 W.
T. 10 N.
(Joins sheet 34)
(Joins sheet 42)
(Joins sheet 47)
(Joins sheet 40)
620 000 FEET
640 000 FEET
490 000 FEET
470 000 FEET
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0.5
19
20
21
22
23
26
27
28
29
30
31
32
33
34
35
Middle Prong Silver Creek
Partman Branch
Gas
SaB2
SaC2
SdD2
SdF
SL
Je
Kr
OrB2
OrC2
RuB2
RuC2
w


42
N
1 MILE
1 KILOMETER
SCALE 1:20 000
0
1/4
1/2
3/4
1
0
0.5
1
(Joins sheet 35)
(Joins sheet 41)
(Joins sheet 43)
(Joins inset, sheet 47)
R. 19 W.
R. 18 W.
T. 10 N.
690 000 FEET
645 000 FEET
Boggan
East Prong
Silver Creek
Bowie Creek
Gas
13
28
19
20
21
23
24
25
26
28
29
30
31
32
33
35
36
SaB2
SdD2
RuC2
RuB2
SdF
SL
Je
Ph
Tb
Kr
SaC2
Cs
OrC2
OrB2
w

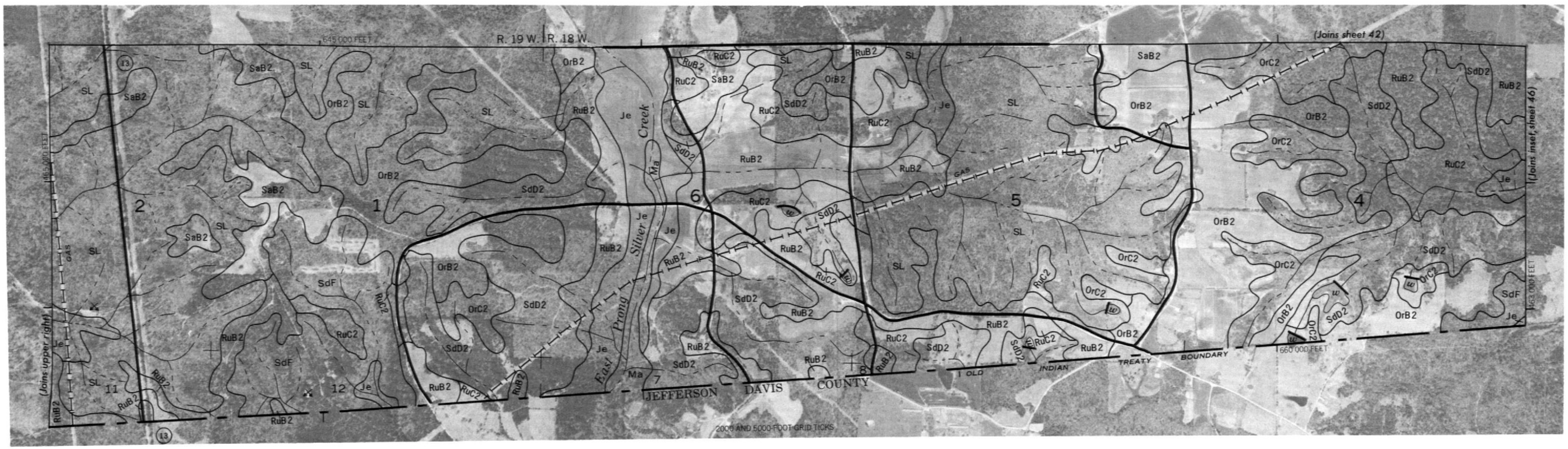

R. 18 W. R. 17 W.
(Joins sheet 36)
(Joins sheet 44)
(Joins sheet 42)
(Joins inset, sheet 46)
T. 10 N.
685 000 FEET
N
1 MILE
1 KILOMETER
SCALE 1:20 000
Skiffer Creek
Lipsohd Creek
Bowie Creek
19
20
22
23
24
25
26
27
29
30
31
32
34
35
36


44
N
1 MILE
1 KILOMETER
SCALE 1:20 000
(Joins sheet 37)
(Joins sheet 43)
(Joins inset, sheet 45)
R. 17 W.
T. 1 O N.
710 000 FEET
690 000 FEET
480 000 FEET
470 000 FEET
SMITH COUNTY
OLD INDIAN TREATY BOUNDARY
Saratoga
Uspoha Creek
Okatoma Creek
McLauren Creek
ILLINOIS CENTRAL GULF
GAS
water
49
20
21
22
23
24
25
26
27
28
29
32
33
34
35
36


45
N
(Joins sheet 39)
R. 21 W. R. 20 W.
COPIAH COUNTY
PEARL RIVER
Vaughns Creek
Pokal
South Branch
Dickerson Lake
Crumps Creek
LAWRENCE COUNTY
OLD INDIAN TREATY BOUNDARY
(Joins sheet 46)
(Joins inset, sheet 38)
T. 9 N.
(Joins sheet 44)
R. 17 W.
Okatoma Creek
COVINGTON COUNTY
SMITH COUNTY
(Joins inset, sheet 46)
3000 AND 5000-FOOT GRID TICKS
SCALE 1:20 000
1 MILE
1 KILOMETER

SIMPSON COUNTY, MISSISSIPPI — SHEET NUMBER 46

N



1 MILE

1 KILOMETER

0 | 1/4 | 1/2 | 3/4 | 1

0 | 0.5 | 1

SCALE 1:20 000